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Editorial

SCIENTISTS AND LOYALTY

SCIENTISTS have always been suspicious characters—members of an international brotherhood, a freemasonry with a secret language of symbols and equations they alone understand.

Through the affairs of May, Fuchs, and Pontecorvo, the worst misgivings of solid citizens have been confirmed. Rebecca West, whose articles on Lord Haw Haw and other wartime traitors have made her a recognized expert on the psychology of treason, has written an article for the *New York Times Magazine*, explaining why the scientific mind is peculiarly likely to lack loyalty. The official report of the Joint Congressional Committee on Atomic Energy, summarizing the trial of Greenglass and the Rosenbergs, was prefaced by an essay in the same vein.

Probably most Americans, if asked for the three words they most readily associate with the adjective "atomic," would supply first "bomb," then "scientist," and third "spy."

It was easily foreseeable (and has often been predicted in the *Bulletin* since 1945) that the secret development of the atomic bomb during the war and the atomic arms race that was bound to follow it (unless stopped by international agreement) would quickly change the initial admiration for the men who so dramatically brought the war to an end into fear and suspicion of the same men as holders of real or imaginary "secrets" that may spell security or calamity for the nation.

Science became the first profession in America to be exposed to wholesale loyalty investigations. Public accusations and private innuendos did not spare the most distinguished of the scientists. Heads of some large laboratories have spent most of their time in the last five years fighting for clearance of their research personnel. Many a young scientist has had several of his best years wasted, his career undermined, and his meager resources mortgaged by costly and prolonged proceedings before loyalty boards. Often their predicaments were caused by nothing worse than a minor incident in school or college days—the signing of a petition, a small contribution to a fund for an apparently legitimate liberal cause, or even similar "misbehavior" of a relative.

Gradually, other groups of public servants have become exposed to similar suspicions and investigations—a new kind of "occupational hazard." However, in no other case has there been such a tendency for generalization. The affair of Alger Hiss has not provoked a discussion of reasons why lawyers are likely to lack moral and civic principles—although a competitor of Rebecca West could have attempted a psychological disquisition on the influence of legal training on man's faculty for finding alibis and excuses for any kind of antisocial conduct. The majority of Representatives and Senators in Congress are themselves lawyers, and the psychology of the legal profession is not a mystery to them. Not a single one of them has had scientific training, and the attitudes and standards of behavior of scientists are a closed (and probably, a wicked) book for them.

Did not Mr. Baruch, the park-bench sage of Washington, deliver himself—as final piece of advice upon resigning his job as American representative on the United Nations Atomic Energy Commission—of the pronouncement "Science must be free, but not so free as to destroy mankind"—apparently implying that this is what scientists are likely to do if not subjected to close supervision by more level-minded and reliable citizens.

For several months the *Bulletin* has been planning a discussion of the position of scientists in present-day society. A number of problems deserve consideration: Should scientists participate in public affairs more or less than they do now? Are scientists likely to contribute to political life realism and clarity which are the hallmarks of scientific thinking in its usual sphere—or merely confusion born out of the naïveté of abstract thinkers confronting practical problems?

Is there some truth in the assertion that the training of scientists in skeptical thinking and irreverent scrutiny is dangerous to all established dogmas? Does the iconoclastic attitude which makes the progress of science a perpetual revolution make scientists equally lacking in loyalty toward social and political institutions? There is no such thing as respect for the opinion of the majority in science; are scientists equally inclined to flout the opinions of the majority in political life?

What is the actual record of loyalty and disloyalty of scientists in America and elsewhere? How is the scientific profession bearing up under the present hot-and-cold water treatment of admiration (and higher pay!), on the one hand, and suspicion (and loyalty checks!), on the other? Has the new position of the profession in the limelight of public attention affected the kind of people who are attracted to scientific careers? Does it threaten to paralyze the freedom of thought and the spirit of free inquiry which has been the basis of the spectacular development of science since the days of the Renaissance?

All these and many other aspects of the problem of scientists in society we think are worthy of thoughtful analysis by scientists themselves as well as by sociologists and political analysts.

We have not as yet had as much success as we had hoped for in initiating the discussion. Among scientists, we have encountered a great deal of fatalism or outright despair about the situation and the feeling of the futility of its public discussion. We wanted to bring together a number of typical stories showing what suspicion and loyalty investigations have meant to individual scientists; but several scientists, after having promised to supply us with candid stories of their tribulations, decided, on second thought, that they would rather not have their cases given publicity, even when they have ended in complete clearance. Even professional writers, asked to compile a review of the loyalty pro-

ceedings of the last few years, were reluctant to touch the topic.

What worries us in this situation—in addition to the suffering caused many of our colleagues and the possible damage to scientific progress—is the general disinclination of those concerned to speak up, which demonstrates their disbelief in the fundamental soundness and fairness of well-informed public opinion.

This is an unhealthy sign in a free society. The first step toward totalitarianism is to impress the majority of the people that their best interests are served by keeping their mouths shut. The fear of unfavorable public reaction, worry for professional security and advancement which could be jeopardized by participation in public discussion, undermine the mechanism by which public opinion is formed in a democracy—long before the threat of concentration camp or firing squad ultimately silences it.

In partial fulfilment of our program we printed in the last issue of the *Bulletin* an article by Francis Biddle, "Sickness of Fear." In continuation, this issue bring articles by a nuclear physicist, Mr. Allison, and by a sociologist, Mr. Grodzins, as well as statements by several eminent British scientists. We hope that this will be only the beginning of the discussion.

—E. R.

WHERE CREDIT IS DUE

IN ALL countries a more or less conscious tendency exists to refer more often to the work of one's countrymen than to that of scientists from other countries. This is natural and is often a simple consequence of language barriers or personal familiarity with the work quoted. Equally human, however, is to notice a similar preference in foreign papers and to see in it a sign of bias.

Normally, such national animosities in the field of science are slight and inconsequential. It is different, however, when exaltation of the work of compatriots and slighting of that of foreigners becomes systematic and tendencious, when minor and belated contributions of countrymen are made into great discoveries, while well-known and universally admired achievements of scientists from other countries are disparaged or passed in silence.

Americans are alternately amused or angry when Soviet propagandists claim one scientific discovery after another for Russian scientists of this or past centuries. This imposes on us the obligation to be particularly scrupulous in giving scientific credit where credit is due.

The occasion for these thoughts was a recent visit to Chicago of Professor Francis Perrin, who showed us that in the article, "New Horizons for Industry in the Isotopes Field," by AEC Commissioner T. Keith Glennan,[1] no reference to the work of the Joliots was made at all.

Gamow's work of 1928 was laid in the United States—while, in truth, he was then a Russian physicist on leave in Germany.

Mr. Glennan is not a physicist and he cannot be blamed for these errors in the historical introduction to this speech on the industrial use of the isotopes. The blame belongs to the *Bulletin's* Editor, who let them pass uncorrected, and on the sources which supplied Mr. Glennan with background material. Are there some government employees who feel they may court displeasure if they refer with admiration and respect to the work of a Soviet scientist, or to the achievements of Joliot?

If so, let them be promptly disabused by their superiors.

—E. R.

[1] *Bulletin*, June, 1951, p. 174.

"Senator, here's the man who reported the leak at Oak Ridge. . . ."

THE BASIS OF NATIONAL LOYALTY

MORTON GRODZINS

This analysis of the social factors underlying a man's loyalty or disloyalty to his country is contributed by a political scientist at the University of Chicago, who is currently engaged in a study of the sociological foundations of national loyalty. Mr. Grodzins is the author of Americans Betrayed. *He has recently been appointed editor of the University of Chicago Press.*

IT IS a contradiction in terms to speak of a man without loyalties. He does not exist. The human qualities that differentiate man from other mammals are the products of his social life. One with all the attributes of man, including his brain, is in isolation not a man. He is a beast.

This only says that when you scratch man you touch loyalty. For man means society. And society—social structures of every sort—rests upon loyalties: upon systems of mutual rights and duties, common beliefs, and reciprocal obligations. To accuse one of being devoid of loyalty can have only one meaning. His loyalties are antagonistic to your own.

The basic objective of this article[1] is twofold: to show how factors of life situation tend to bind men's loyalty to their *nation;* and to apply this general analysis to the situation of physical scientists. My current research is concerned with the social and psychological correlates of national loyalty and disloyalty. I have not studied physical scientists, as such. Therefore, my primary emphasis must be a general, though partial, statement of theory. The concluding remarks on the situation of scientists are simply deduced from that theory. The entire statement is a preliminary one, a report on a larger work in progress, subject to correction on the basis of later evidence and reflection.

FUNCTION OF LOYALTIES

Loyalties are a part of every individual's life because they serve his basic needs and functions. They are a part of his indispensable habit patterns. Loyalties provide him with a portion of that framework through which he organizes his existence. In the absence of such a framework, he could establish no easy, habitual responses. He would be faced with the endless and hopelessly complicated task of making fresh decisions at each moment of life. He would soon degenerate into wild and random inconsistencies or into a brooding state of confusion and indecisiveness, conditions that soon merge into the psychotic.

The propensity of man to organize the structure of his activities is apparent in every phase of his life. His very perceptions are so organized. Even what a man sees or smells or hears is determined in very large part by predisposing frameworks. This has been demonstrated in laboratory experiments, and the experiments are duplicated daily in ordinary life situations. Drivers of cars which have collided have very different stories to tell. Two readers of the same book derive from it support for widely divergent points of view. Chinese music and Mohammedan paintings are displeasing or unintelligible to those who have not acquired the framework necessary to make them beautiful and meaningful.

This "structuring" of life's enormous range of potentialities begins from the very moment of birth. For the first years of life, when the plasticity of individuals is very great, the family is the dominant molding agency. Later, play groups, school, church, job, social class, government, all take important, sometimes parallel, sometimes conflicting, roles in shaping an individual's career, attitudes, and personality.

These groups that so crucially affect existence are the groups that demand and receive loyalty. They become the eye-pieces through which a person views his life and its relation to society. They actually and literally determine what he does and does not see, what he does and does not like, what he does and does not consider his life goals. Without the aid and comfort of these group ties, an individual would find existence impossible.

Loyalties are thus the source of great personal gratification. They contribute to making life satisfying. They protect the individual, reducing the area of his uncertainty and anxiety. They allow him to move in established patterns of interpersonal relations with confidence in the action expected of him and of responses that his action will evoke. By serving the group to which he is loyal, he serves himself; what threatens the group, threatens the self. There is no self outside group activity. "In so far as one identifies himself with a whole, loyalty to that whole is loyalty to himself; it is self-realization, something which one cannot fail without losing self respect."[2]

Complete identification between individual and group does not often exist. Totalitarian governments attempt to accomplish this end by destroying all intermediary loyalties, or by fusing the activities of all other groups with those of the state.

In the Western democracies the case is different. Except in periods of extreme crisis, freedom to form and maintain group ties is cherished and encouraged, and individuals preserve strong loyalties to numerous nonnational groups. These loyalties are given to family, friends, neighborhood, church, ethnic society, job, class, and to a host of other institutions, groups, and idea systems. They exist most frequently in situations that bring the individual face-to-face with others who share his views and situation; they may also exist where this immediate human contact does not exist. The relative strength and weakness of these

[1] The substance of this paper was first presented at a conference on "What is Loyalty for the Scientist?" at Roosevelt College, Chicago, on May 18, 1951.

[2] C. H. Cooley, *Social Organization: A Study of the Larger Mind* (New York: C. Scribner's Sons, 1909), p. 38.

numerous loyalties change with age, with shifts in life situation, with new experience, and especially under stress of crisis. They change as old relationships no longer serve biological needs or as they no longer supply satisfaction and security to the individual in the total network of his social existence.

TWO STRANDS OF NATIONAL LOYALTY

Individual satisfactions are related to *national* loyalty in an infinite number of ways. Almost the entire social structure is organized to promote and sustain this relationship. One of the prime reasons for the strength and universality of national loyalties is the virtuosity and deftness with which the connection between nation and happiness can be established. For convenience, one can distinguish between two broad strands which together tend to bind human satisfaction to national welfare.

DIRECT NATION-PERSON TIE

Patriotism as a Religion.—On one plane the relationship between individual and nation is direct. Satisfaction springs from immediate identification with nation, from the acceptance of national symbols, the internalization of national ideals. There is delight in attaching oneself to a larger cause. Inner doubts are dissipated: the cause gives purpose and direction to life. The meanness and pettiness of everyday existence become unimportant; the nation is the dominant power unit in the modern world and it is involved in enterprises of grandeur. In this way, the nation acts to dissipate actual and imagined discontents and weaknesses; it simultaneously crystallizes the common faith which philosophers and politicians, sociologists and seers have argued is essential to any successful group life.

The world is organized territorially, and to some extent functionally, into national units. This very organization permits a complex flow of simple emotions to be woven into the sentiment of national loyalty. National states and the institutions within them conspire to promote and to sustain this loyalty.

Ethnocentrism: Death to the Porpoises. The tendency of man to prefer the familiar to the unfamiliar is a universal social phenomenon. The search for new experience and delight in the exotic must largely be understood in terms of the reassurance of the familiar and the habitual. As the world is presently organized, the familiar and the habitual are principally equated with the national. In this way affection for the scenes and experiences of childhood becomes identified with the nation. The familiar language, the familiar food, the familiar humor, the familiar interpersonal responses—including, as Kipling wrote, the familiar lies—all are affectionately related to the nation.

Familiar misery is frequently more attractive than promised or actual, but unfamiliar, bliss. This is a function of what social anthropologists call ethnocentrism, the practice of judging foreign customs by familiar standards. Even the mean and savage regard their own way of life as the best and all others as sub-human or at least distinctly inferior. This mechanism has been described and documented in many ways. A classic example is in Anatole France, whose Penguin cottager affirms:

> "He who says neighbours says enemies. . . . Don't you know what patriotism is? For my part there are two cries that rise to my lips: Hurrah for the Penguins! Death to the Porpoises!"

The modern network of world-wide communications and other technological factors tend to weaken the force of ethnocentrism. But it remains potent because it lives on difference, real or imagined. It is strengthened by the structural qualities of the nation-state system. The great hostilities generated within nations are suppressed to every extent possible; they find outlets in bursts of patriotic fervor directed against other national units.[3] Man's love of community—his aim-inhibited libido, in Freud's term—is thus encouraged to stop at national boundaries. The ills of one's own person and one's own culture are projected outward: we are peaceful, they are aggressive; we are kind, they cruel; we aim for justice, they for conquest.

These mechanisms prompted the sardonic Sumner to comment that "the masses are always patriotic." They inspire the antagonisms and animosities that are basic to most patriotic endeavor. The process is self-generating and circular. National boundaries and patriotism to the nation establish convenient ethnocentric battle lines; the belligerencies so evoked add to patriotic fervor; the heightened patriotism produces new belligerencies. Thus patriotism can pour meaning into otherwise empty lives. The price may be individuality itself; but this seems cheap to those glorying in and suffering for great causes.

The Conspiracy of Institutions.—The nation is not the only focal point for mass loyalties. Just as loyalty to a nation competes with loyalty to family, job, and friends, so it must compete

[3] See Talcott Parsons, "Certain Primary Sources and Patterns of Aggression in the Social Structure of the Western World," *Psychiatry*, X (May, 1947), 167–81.

"The Era of the Oath"

"One can only guess at the judgment of posterity. My own guess is that historians sufficiently removed from the present to look at it with detachment may very well refer to it as the era of the oath. Oath-taking is not new, of course. It has served a ritual function throughout the whole history of western civilization. The peculiarity of contemporary oath-taking, however, is first of all, its prevalence, and second, its negative nature. It is a mistake to call the kind of oath so commonly required of men today a 'loyalty oath.' A loyalty oath, by definition, would have to be an affirmation. But the kind of declaration to which more and more Americans are now being asked to subscribe is a disclaimer. Instead of calling it a 'loyalty oath,' we ought, in the interest of accuracy, to refer to it as a 'non-loyalty oath.' "

—Alan Barth
Author of
The Loyalty of Free Men

with loyalty to race, religion, and class. The nation's advantage is based not only on the psychological processes just described: to some degree those energies are also available to other causes. The strength of national, rather than other, loyalties is also partly the result of objective facts: common language, common historical traditions, a definable territory. Finally, national loyalty is built strong as the result of the active role taken by social institutions in building a firm direct tie between individual and nation. The institution of government is of first importance in this effort.

Government is a powerful agency in setting up norms of behavior. By laws establishing limits of freedom and control, government defines general guidelines for life activities. Through control of the schools, government has a crucial lever for inculcating habits of thought, for encouraging some character traits and discouraging others, and for molding individuals to standards of thought and action. Through its multitude of substantive programs, the state purchases conformity and allegiance. By enforcing service in the armed forces, the state transforms citizens into soldiers and in the process brings about similarly striking changes in attitude and outlook. As the source of major news developments, government commands a large portion of the words and symbols transmitted to the public by press, radio, television, and film. By the encouragement of national holidays and festivals, government pounds home myths of national might and images of national glory. By fostering patriotic organizations and activities, government enlists citizens in active demonstrations of patriotism.

There are tremendous variations in the extent and manner that governments utilize the power they possess for building patriotism. There are even greater variations in the size and composition of the groups to which governments are responsible and thus in the final ends for which patriotism is utilized.

Democratic values and traditions do not countenance the ruthless exploitation of people by the state for the state. The power structure within democracies makes such exploitation impossible; it occurs only at the price of changing the character of the state itself. And in the United States, government power is further dispersed as the result of the federal system. Nevertheless, even in the United States, the patriotic theme is an essential ingredient of all public activity, even that at the state and local level.

Public education, for example, has been least affected in the United States by the insistent trend toward national financing and supervision. Yet, as the studies of Charles Merriam and Bessie Pierce have shown, the themes of patriotism and national service are consistently and insistently pursued.[4]

The total impact of the schools is designed certainly, if unwittingly, to conform to Rousseau's dictum: that education should direct the opinion and tastes of men so that they will be "patriots by inclination, by passion, by necessity."

This is true for all nations. Naturally enough, the truth has been demonstrated most graphically and most bleakly by the totalitarian governments. The Nazis showed that a state-operated educational system could be even more powerful than the family as a molder of attitudes and personality, supplanting or destroying the family's influence to a large measure.

The Nazis attempted to create a situation in which individuals received all their cues for action from a state or party agency. They did this by capturing or destroying all other institutions and groups—religious, professional, and social—that guide and control human action. The terrible efficiency of this fully mobilized state-controlled education cannot be doubted. It drastically altered the direction of the culture and the temper, the very personality of the people.

In the United States and other Western democracies, one does not find this total mobilization of state resources and state institutions for the purpose of constructing strong national allegiance. Yet state activities, with minor exceptions, move strongly toward cementing loyalty to the nation. Only a small portion of these activities aim at building direct emotional ties between individual and state. School programs illustrate this attempt, as do bond drives, ceremonies dramatizing the might of armed forces, the display and symbolic care of the flag. But in the democracies, unlike the totalitarian nations, the major impact of state activities is an indirect one: it strengthens national loyalties by strengthening the numerous voluntary groups through which so much of the life and politics of democratic people is organized and directed.

The effects of these programs do not, of course, stop with the voluntary groups. The groups have a vitality of their own. They, in turn, direct the emotions of group members toward the nation. In this circular fashion, virtually all groups contribute to national allegiance. Their members minimize or efface any antagonisms between their own group and the nation. They identify group and national welfare. "What is good for business is good for the nation," trumpets the National Association of Manufacturers. "High wages mean national health," responds the Congress of Industrial Organization.

The voices and forces all pushing in the same direction produce the religious quality of patriotism. It is a quality for which totalitarian nations strive continuously but which is known to democracies largely in periods of crisis—"an element of worship, of willing sacrifice, of joyful merging of the individual in the life of the nation."[5] Here the direct nation-individual linkage is most graphically expressed.

INDIRECT NATION-PERSON TIE

Non-National Loyalties as Filters of National Loyalty.—The second strand relating individual to nation is an indirect one. Here satisfactions are experienced in the face-to-face relations of everyday living, in pleasurable interpersonal experiences, warm friends, sympathetic neighbors, the achievement of expectations in marriage and career. One's relationships to the nation are transmitted, or filtered, through these experiences. To the extent that they produce a satisfactory life situation, the individual's identification with his nation is positive. His loyalty may be presumed, though it is a loyalty different in kind from the loyalty fostered by direct ties with the state. Where a life situation does not produce a balance of gratifications, the individual's identification with the nation wavers. His loyalty may be more easily eroded.

Until the advent of modern totalitarianism, it is doubtful if the direct nation-person tie could have been built strong enough to sustain national loyalties over long periods of time. It involves, ultimately, the destruction of all privacy. Only with the tech-

[4] Charles Edward Merriam, *The Making of Citizens* (Chicago: The University of Chicago Press, 1931); Bessie L. Pierce, *Civic Attitudes in American School Textbooks* (Chicago: The University of Chicago Press, 1930).

[5] Bertrand Russell, *Why Men Fight* (New York: The Century Company, 1917), p. 55.

niques of modern political exploitation does this seem possible.

For the Western democracies, at least, patriotism cannot be maintained over long periods of time by the direct tie to the nation alone. No one has expressed this idea more clearly than George Washington, who wrote from Valley Forge in April, 1788:

> Men may talk of patriotism; they may draw a few examples from ancient story, of great achievements performed by its influence; but whosoever builds upon it, as a sufficient Basis for conducting this Bloody war, will find themselves deceived in the end. . . . I do not mean to exclude altogether the Idea of Patriotism. I know it exists, and I know it has done much in the present Contest. But I venture to assert, that a great and lasting War can never be supported on this principle alone. It must be aided by a prospect of Interest or some reward.

Washington's concept of "interest" was largely a commercial one. The definition need not be so narrow. But Washington's point is basic.

Democratic nations cannot exist unless the "interests"—the life goals—of its citizens are at least approximately achieved. And these achievements are in areas where there is little or no direct nation-person relationship. National loyalty here becomes a by-product of satisfactions achieved in non-public spheres of activity.

Indeed, from this view a generalized national loyalty is a misnomer. It does not exist. Loyalties are to specific groups, specific goals, specific programs of action. Populations are loyal to nation only because the nation is believed to symbolize and sustain these values.

Leon Trotsky once remarked that revolutions were not caused by the poor. If they were, he said, there would be revolutions going on all the time. This is one way of expressing the important fact that "life expectations" or "life goals" are not fixed or static concepts. Individuals define these terms in various and divergent fashions; their definitions are influenced in many ways, not least of all by parents, profession, sex, and social class.

To say that loyalty is dependent upon the achievement of life satisfactions is therefore not to say that the poor are the disloyal, the rich, loyal. The individual's own definition of satisfaction is of crucial importance. The fat men who do not make easy converts are those fat in satisfactions, not necessarily in body or other material possessions. A subtle tool to measure

these satisfactions would be an index of the discrepancy, if any, between life expectancy and life achievements, as defined by the individual. Where the spread is a big one, deprivations are experienced and loyalty to the nation (not considering direct nation-person ties) is presumably less strong than where expectations are actually or approximately achieved.

This variety in definition of life satisfactions is crucial to understanding the interplay between those satisfactions and national loyalty.

A second general consideration is also of great importance. Life goals are achieved and life satisfactions are pursued within the framework of groups. The happy man in isolation does not exist. He may—and most frequently does—take his terms of reference, his cues for action, his definitions of the good and desirable from the small face-to-face groups with which he comes into most intimate contact: family, friends, business associates, professional colleagues, fellow-workers. Or these cues for life may be influenced by larger, less visible groups with which he identifies himself: social class, the universal church, the international workers. In these latter cases and even in those cases where frames of reference are derived from such apparent abstractions as "the good of mankind," there is usually a face-to-face group in existence, functioning to define and to clarify abstract goals in terms of day-to-day activity.

The principal loyalties of men in democratic states are directed toward these non-national groups and interests. Their very existence provides possibilities for sharp clashes between national and other loyalties. But these other loyalties are also the most important foundation of national loyalty.

Why this is so has already been suggested. The nation is the most important group with which all persons in a given geographic area are associated. It gives all citizens a common point of reference. It sustains their groups. A threat to a nation is interpreted as a threat to all groups within the nation and to the gratifications derived from those groups. The satisfactions springing from smaller groups are thus related to the nation and to national loyalty.

But in times of crisis, the national demands may easily conflict with the demands of non-national groups. Family welfare, professional status, career and job stability may be threatened or thwarted by governmental policy. In such circumstances, clean choices need not always be made. When they do, national loyalty may mean family or professional disloyalty. Where loyalty to family or to career or to profession is held foremost, then the result is national disloyalty.

The total configuration is a fine paradox: non-national loyalties are the bricks from which national loyalty is constructed; they are also the brickbats by which national loyalty is destroyed.

SOCIAL IMPEDIMENTS TO DISLOYALTY

Many people do not react positively to national symbols. And many do not achieve a balance of satisfactions through participation in non-national groups. There are, nevertheless, potent social forces that push them in the direction of loyal conduct and just as strongly repel them from disloyal acts.

Protest is easy. Many acts of social protest and adjustment, short of disloyalty, are readily available. Within the framework of national groups, there are a great number of attachments available to man in democratic states. If he does not like one lodge, there are others. If he is dissatisfied with his neighbors, he can move. If marriage palls, divorce is easy. If pastor or church become distasteful, other leaders and other denominations exist in great number.

Even in the political sphere, democratic society allows for easy protest. The existence of political parties channels discontents into socially approved forms. Inside and out of the formal party structure, special interest groups offer numerous activities in a wide spectrum of political beliefs.

These avenues to sense and satisfaction in life are not only readily available. They are, just as importantly, prescribed and accepted social processes. They are carried on within the nation, not against it.

Some protests against a life situation are neither easy nor socially acceptable. They run the whole gamut of deviant behavior: alcoholism, arson, bank robbery, embezzlement, promiscuity or perversion, hoboing. In the extreme, the individual may withdraw himself from all meaningful human

contact. Eventually, he may find himself under the wheels of a street car or, escaping or denying the psychiatrist's skills, in an institution for the mentally ill.

These deviant methods for seeking integration and meaning for life meet with the highest social disapproval. Yet many of them, especially within the great urban centers, are available. They are utilized without discovery and therefore without social sanction. They may result in intense guilt feelings that frustrate their aim, though men have infinite abilities to appease their conscience and to rationalize their behavior. And even if brought to public light, the community wrath aroused hardly compares with that called down upon the head of the traitor.

The very ambiguity of what constitutes disloyal acts in a democratic state widens the area of permissible acts of public protest. No such ambiguity exists in the totalitarian states. But every culture must provide methods of easing tensions and discharging aggression. Where they are not available in the public sphere, they express themselves privately; or they may be mobilized against an external foe.

Whatever the type of state, the disloyal act must compete with all the other socially disapproved means by which individuals seek to express dissatisfaction and to achieve integration and satisfaction. But the disloyal act is the least likely way.

Disloyalty is difficult. There are few available alternatives to national loyalty. This is true on a relative scale: the very multiplicity of other available opportunities for deviant behavior makes the disloyal act less enticing. It is also true on a positive scale: the traitorous act usually requires a combination of circumstances not easily achieved. Confederates are usually necessary, and they are not always available. The necessary joint activity involves ideological and personal demands that are often extreme. Foresight and planning may be necessary. The time must be propitious.

A related factor discouraging acts of disloyalty is their lack of relevance to the frustrations and deprivations that individuals commonly face. Relationships between deprivation and protest are not always clear: witness the man who kills his cat because he cannot kiss his wife. Usually, however, the connection is more apparent. And only as the state increases its functions and demands more and more from its citizens do acts of disloyalty become immediately pertinent. The very increase in state functions thus provides new opportunities for disloyalty. If national conscription did not exist, there would be no draft dodgers. Historically, state programs of the Western democracies have been relatively light in their impact upon the lives of citizens. Only within recent years have government programs made the disloyal act a relevant protest for many people for many reasons.

Even where government programs might realistically inspire protest, other considerations become potent. Satisfactions in the nonpublic spheres of life—on the job, in the home—constitute a powerful deterrent. He who is completely involved in his job, for example, may find no time to become sensitive to political effrontery. This is an ignorance imposed by limitations of time and energy. Most people are "too busy" to acquaint themselves with matters they might find distasteful. Even awareness of the displeasing situation is followed only infrequently by protest so strong that it is disloyal. The penalties for such action strike at the very roots of happiness. Job, family, friends, and comfortable existence are in this sense all hostages insuring loyalty.[6]

Indeed, it is often more attractive to join your enemies than to fight them, especially if they occupy the benches of legality and the seats of power. The most recent striking illustration of this occurred during the Nazi regime. Those abandoning protest may solace themselves with the thought of achieving reform more effectively from within. In the interim, they do not jeopardize many spheres of happiness and need not surrender their hostages.

The scales are thus heavily weighted against disloyalty. Even under the darkest circumstances, individuals can always look to better things in the future. They can channelize their protests within the institutionalized processes, however narrow they may be, and believe with fullest sincerity that no more is possible. And they rationalize their inaction in terms of higher loyalties: the nation must be preserved for all time, the current government must therefore be suffered; socialism (or Mother Russia) must triumph, Stalinism is therefore a temporary evil.

Finally, disloyalty is rare because of the stigma attached to it. Dante placed the traitor in the lowest pit of hell. In the eyes of his contemporaries, the traitor is more corrupt than even the murderer and the rapist. He runs the risk of losing his place in all social life. Since one depends upon society for sustenance in no less certain a manner than he depends upon food, this risk is one that few are willing to take. If he takes it, he has found a new social environment in which to act.

The alternatives to national loyalty increase with advances in levels of education and communication. But it remains true that these alternatives are relatively limited. Traitorous acts stand in a poor competitive position with all the other opportunities for deviant behavior.

In sum, the state has become modern man's largest point of reference. It supplies him with psychic security. Whatever his objective maladjustment

[6] I am indebted to Louis Kriesberg for suggestions incorporated in this and the preceding paragraph.

"The fateful question of the human species seems to me to be whether and to what extent the cultural process developed in it will succeed in mastering the derangements of communal life caused by the human instinct of aggression and self-destruction. In this connection, perhaps the phase through which we are at this moment passing deserves special interest. Men have brought their powers of subduing the forces of nature to such a pitch that by using them they could now very easily exterminate one another to the last man. They know this—hence arises a great part of their current unrest, their dejection, their mood of apprehension.

—Sigmund Freud
in *Civilization and Its Discontents*, 1930

to life conditions, he is molded to conformity by the forces of ethnocentrism, by the powerful antagonisms of the strange and unknowable, by the satisfactions that even suffering sometimes brings, by the utilization of patriotic activity as a substitute for other satisfactions, by the relative absence of alternatives to national conformity, and by the social vengeance that follows the traitorous act. To these factors must be added all the positive steps taken by society to identify the individual with his nation. Government, family, neighborhood, church, school, and business, all push under most circumstances in the direction of strong national loyalties. Life may be hell. But disloyalty is the last way out.

THE SITUATION OF SCIENTISTS

We can now briefly examine the situation of scientists in terms of this incomplete and most general sketch of a sociological theory of national loyalty.

One can hypothesize that scientists are not bound to nation by direct ties of great strength. To the extent that any group can be so categorized, their primary satisfactions issue from work. Their identification with the nation is filtered through these satisfactions. They do not generally achieve gratification through what we have called the religious quality of patriotism.

What happens when they feel their work is frustrated, rather than aided, by government policies? If current programs are so defined (and the objective facts are less important than the definitions given those facts), I suggest the government's program will have adverse effects. Instead of promoting loyal action, it will do the opposite. Evidence from many sources has indicated how important job satisfaction is to national loyalty. And this satisfaction for scientists is, as suggested already, of special importance.

A related point concerns loyalty investigations. If these investigations subject scientists to what they consider unfair changes, if they jeopardize career lines and make good work difficult, if they threaten security and relationships to colleagues, friends, and family,[7] then they run the risk of producing reverse consequences. The conflict again becomes one between national and nonnational loyalties.

But here another factor is introduced, one that a colleague of mine has called the self-confirming prediction. Applied to the situation of the scientist, it says that if you look at a person as if he were disloyal, you invite him to become disloyal. (An old fraternity house aphorism makes the same point: treat a girl like a princess, she acts like a princess; treat her like a prostitute, she acts like a prostitute.)

Other factors of course enter into the situation, and definitions supplied by non-governmental groups, such as professional organizations and friends, may make the governmental definitions less effective. But in larger terms, the point is sound. An individual acts in accordance with social roles that are defined for him largely by others. If a government takes upon itself that definitional task and if it places the individual in a role that indicates suspicion of his intention, disdain for his career, and insensitivity to his problems, then the government invites him to react as he has been defined. In this case, government invites his disloyalty by questioning his loyalty.

More than this, the fraternity of scientists is a world-wide fraternity. The professional guild to which a scientist is attached, from which he acquires prestige and cues for action, is a guild not confined to national boundaries. This is a commonplace. Scientific progress is not confined to single nations. The training of scientists and the ethos of their profession make it difficult for them to accept restrictions on their work. The search for truth, they believe, should be unconfined. Restrictions on freedom imposed by a nation run counter to the professional creed.

The dilemmas of the situation are clearly drawn in a recent novel, where a scientist declares:

> Where does a man's loyalty lie? Is loyalty to the race larger than loyalty to a nation? . . . I am a scientist, dedicated to truth. If I cannot speak the truth, I have no reason for existence. If I lie, I am false not only to you, but to myself, to my science, to my civilization, and, as I believe, false to the best interests of my country. . . . Science can never submit to censorship. That is not science. . . . It is madness.

The attempt, illustrated in the quotation, to bring the professional demands in line with the national demands is typical of all those faced with conflicting roles. Other solutions are also possible, many illustrated by recent actions of scientists. These include giving primacy to science (withdrawing from work under government contracts), the opposite (demanding complete cooperation with government orders), and looking to long-term solutions in which the conflict of loyalties completely disappears (working for a world state).

Some reaction patterns must be far more complex. Some scientists may emptily follow the rituals expected by government. Others may retreat into a state of powerless frustration and diffuse hostility. They may express this attitude in a number of ways, ranging from a crab-like withdrawal into a laboratory to an insistence upon overconformity to national demands. Still others may subordinate both science and their nation to a third value, world peace, for example. And another possibility is the sale of skill to whoever pays the cash. The Nazi scientists who once served the Weimar Republic and now serve the United States illustrate this adaptation.[8]

The conflict between national and scientific demands cannot, in any case, be dismissed as unimportant simply because it seldom shows itself in cases of outright treason. As we have seen, potent social forces make this way very difficult. The more damaging effects of the conflict are more subtle. And the damage may be done both to a nation and to science.

The scientist's conflict between professional and national loyalty has its counterpart in the situation of persons in many other areas of work. Similar conflicts exist between loyalties to nation and family, and nation and labor union. But the conflict is especially acute for scientists. A larger portion of their lives, in comparison with those pursuing other careers, is devoted to their work. And the consequences of their giving primacy either to national or to professional loyalty are very grave. Hence their difficult and uneasy compromises.

If some factors in the situation indicate a possible weakening of scientists' identification with the nation, there are many others which are leading scientists in the United States to a very strong national identification.

The situation at present is abnormal. It is a temporary crisis. And there is almost no limit to sacrifices that men will make and still remain loyal to a

[7] It should be emphasized again that I have not studied the attitudes of scientists regarding these programs. The statements are conditional; the conclusions are valid only if the conditions postulated are true.

[8] I have heard it argued that these people typify the scientists whose loyalty to science is greater than all others. In the long run, I would argue that totalitarianism of any variety, Nazi or Communist, is incompatible with scientific progress.

cause. Sacrifice and grief, indeed, raise loyalty to its highest levels. Whether this occurs, or whether group deprivations become the source of disloyalty, is again the result of the deprived group's own definition of things.

This definition, in part, rests upon the alternatives available. Without alternatives, deprivation cannot easily lead to disloyalty. In the current situation, the most likely alternative is the Soviet one. And scientists who chafe under American restrictions must certainly believe their lot would be infinitely worse in Russia. The Russians themselves have supplied ample evidence for this conclusion.[9] The disloyal alternative, for most scientists, is therefore no alternative at all.

Furthermore, the scientist's access to government research funds, his new laboratories, and his newly affirmed status can be important factors contributing to identification with nation. They may produce a high level of work satisfaction. Simultaneously, the scientist becomes directly involved in the affairs of nation and, in some cases, his future professional work becomes dependent upon his continued contribution to nationally-defined goals.

Scientists, finally, are not a separate breed of man. They, like others in the Western culture, cherish a set of Western values. Some, such as the value of freedom, they find indispensable to their own work and work satisfaction. These values, as already indicated, may not lead to extravagant national loyalty. But they certainly militate against an identification with the Soviet Union. They sustain the scientist in crisis. They are drawn upon as scientists work politically to encourage those national policies which maximize their professional effectiveness.

The catharsis of political activity is itself helpful in sustaining loyalty. But the scientists' effectiveness in influencing government programs is even more important. From this point of view, the government's policy in encouraging scientists to participate in decision-making which affects scientific programs contributes to their national identification. And the scientists' role in great programs of government is both a source and a symbol of their loyalty.

The situation of scientists can thus be roughly summarized: their life conditions do not encourage strong immediate ties to nation. And current work restrictions, if they are threatening to career, if they seriously impede research, will be reflected in a weakened positive attitude toward nation. On the other hand, they are sustained in loyalty by the temporary nature of the crisis, by their direct professional and political involvement in affairs of nation, by the lack of disloyal alternatives, by the strength of values whose maintenance is of immediate importance to their work.

[9] For one collection of documents, among many, see George S. Counts and Nucia Lodge, *The Country of the Blind* (Boston, Houghton Mifflin Co., 1949).

CONCLUDING REMARKS

The view presented here rejects the contention that national allegiance is a simple conditioned response to political symbols. It equally rejects the idea that loyalty is a cool and rational choice of one way of life over another. It emphasizes that loyalty can be explained, like other social phenomena, in terms of life situation (discussed here) and personality attributes (neglected here).

This view also recognizes how ambiguous the concept of national loyalty is in Western democracies. Does "nation" mean administrative programs or national ideology or a specific leader or a system of government? The variety in answers to this question makes it possible for traitors to act in the name of patriotism and patriots to perform the role of traitors. Traitors, for example, can wreck great programs of government in the service of lofty slogans and honored principles; and the patriot can subvert principle while honoring program.

This ambiguity becomes crucial when linked to the tendency, already mentioned, of all groups to validate their conduct in terms of national values. This is a near-universal phenomenon. Klu Klux Klansmen and racial equalitarians, high tariff and low tariff proponents, management and labor, all link their efforts to national welfare. Even traitors do the same.

Disloyalty to the nation therefore does not emerge as a simple act of rejection. With rare exception it also requires a positive act of identification, sometimes identification with the nation itself, though in one of the meanings not recognized as valid by others. Despite the many social impediments discussed above, people thus slip into disloyal action. A new loyalty becomes primary: to family, to labor union, to profession, to Marxist study club. What sense of evil or betrayal they may feel as the result of subordinating national to other demands becomes overshadowed by the positive values of serving a cause.

This is so even for the most blatant traitor. He regards his acts as an expression of loyalty to, not disloyalty against. He is almost always supported by some group with which he is in intimate, daily, face-to-face contact. There are few Iagos who glory in villainy. "No man at bottom means injustice," Carlyle said. "It is always for some distorted image of a right that he contends."

And this leads to a final observation. This is in the nature of opinion, not directly a part of the analysis presented here but growing out of that analysis.

I have tried to indicate, in a most general and incomplete way, how democracy, to attract the loyalty of men, must provide them with satisfactions that spring from the ordinary round of their life.

The loyalty thus engendered is different from the religious-like quality of direct nation-person relationships, those dominant in totalitarian states. In the latter case, loyalty emerges from the poverty or absence of participation in voluntary groups. It is mobilized by state leaders, and it is marked by a high emotional content. In democracies national loyalties are largely by-products of participation in voluntary groups. They do not emerge as a consequence of manipulation from above. They are not submissive. They are more studied, less emotional; more qualified, less completely mobilized at any given moment.

This explains the greater intensity of totalitarian loyalties, in comparison with democratic ones. It also suggests the greater duration and stability of democratic loyalties. They are based upon human satisfactions derived from numerous overlapping but independent group contacts. Barring complete social catastrophe, no single cause can bring widespread dissatisfaction, widespread disloyalty.

To sustain such loyalties, democracies in practice must supply some achievement of the expectations promised in the democratic creed. The danger, among scientists as well as others, is not that of individual persons becoming disenchanted and turning to disloyal acts. Nor is the danger that democracy will fail because it is inherently unable to supply the immediate life satisfactions that, indirectly but solidly, lead to strong national allegiance. The danger is that democracy may fail, not on its merits, but because it fails to be democratic.

THE LOYALTY PROGRAM OF THE UNITED STATES GOVERNMENT

LEONARD D. WHITE

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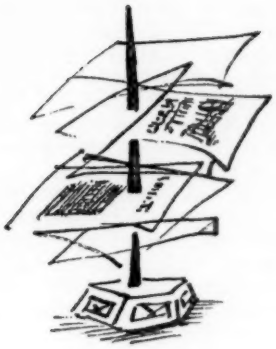


THE problem of loyalty in the public service is as old as the government itself. When Washington and his three department heads had to select the first few hundred federal officers and employees, they required loyalty to the new Constitution as one test of suitability. The struggle over the adoption of the Constitution had been hard-fought; at the time no one could be confident of its success, and Washington took no chances on appointing either old Tories who looked for a reunion with Great Britain or other opponents of the new order. In 1801 Jefferson announced a three-fold test of suitability for public office, including loyalty. He declared he would ask only: Is he honest? Is he competent? Is he loyal to the Constitution?

The quick success of the Constitution caused this informal loyalty test to drop from sight. It was renewed in the early days of the Civil War under more formal auspices. The House of Representatives appointed a select committee on the loyalty of clerks, the record of which is of some interest in comparison with the current loyalty program. The committee considered itself as like a grand jury, not a trial jury, and consequently did not notify employees of charges against them, or give them any opportunity to defend themselves. No rules of procedure were stated. The committee heard evidence from anyone who made a complaint, most of whom were fellow clerks. In every instance in which the committee decided that an employee was disloyal, the evidence was submitted to the head of the agency concerned. Charges against more than five hundred persons were investigated. The evidence ranged all the way from that against a messenger who publicly declared he was the man to hang Abraham Lincoln if he could, to a White House employee who was observed apparently to agree with an assertion by one of his fellow workers that Mr. and Mrs. Lincoln were low mean people who did not know how to act as gentlemen and ladies. The heads of departments declined to remove many against whom the committe had gathered evidence and apparently exercised an independent judgment in each case. Neither Congress nor the executive branch set up procedures designed to safeguard either the interest of the government or its employees.[1]

President Wilson took steps during World War I to ensure the loyalty of federal employees by issuing a confidential executive order to agency heads in the following terms:

> The head of a department or independent office may forthwith remove any employee when he has ground for believing that the retention of such employee would be inimical to the public welfare by reason of his conduct, sympathies or utterances, or because of other reasons growing out of the war. Such removal may be made without other formality than that the reasons shall be made a matter of confidential record, subject, however, to inspection by the Civil Service Commission.[2]

It will be noted that no provision for notice of charges, hearing, or opportunity for defense was made by this authorization. The order presumably expired with the end of the emergency.

[1] House Report 16, 37th Cong., 2d sess. (Jan. 28, 1862), 92 pp.

[2] *Bailey* v. *Richardson*, Brief for Respondents, p. 81.

SOME GENERAL CONSIDERATIONS

It is convenient to state at this point a few principles that lie behind the whole employment policy of the United States, or indeed of any other employer, public or private.

1. No one has a right to work for the government; employment by it is a privilege.

2. As an employer the government has certain rights, in common with all other employers. It has the right: a) to employ persons to do its necessary work and to omit to employ those who are either unnecessary or undesirable; b) to set up general standards calculated to deal fairly with the government and with its employees or applicants for employment.

3. The government has a right to expect loyalty upon the part of its employees, and as one element of its standards of employment to exclude persons of whose loyalty there is a reasonable doubt.

4. The government must be the sole judge of suitability for employment by it, whether on grounds of capacity or skill, age, health, character, or loyalty, or other appropriate qualifications.

For nearly one hundred years there were no formal standards or rules to guide the discretion of appointing officials in selecting or rejecting persons desiring employment by the government, or retaining their positions in the government. Public authority possessed the same freedom of action as that enjoyed by business employers.

In due course of time some common "ground-rules" were established by law or regulation, two aspects of which need to be noted in connection with present loyalty standards and procedure: character investigation of applicants by the U. S. Civil Service Commission, and removal procedures from the classified competitive civil service.

In 1871 Congress empowered the President to prescribe regulations for appointment to the classified service in respect to age, health, character, knowledge, and ability. The United States Civil Service Commission was established in 1883 and has enforced standards of character for applicants from that date to the present. The Commission disqualifies persons using intoxicating liquor to excess, and exercises its discretion in admitting to examinations persons who have been convicted of crime, or whose character for other reasons is unsuitable. Doubt concerning loyalty is an aspect of character relevant to suitability and was looked into by the Commission during World War II under war service regulations.

The removal of persons from the classified competitive service was regulated by the Lloyd La Follette Act of 1912, the provisions of which are still in effect. The act required that no person should be removed except for such cause as would promote the efficiency of the service. A written statement of charges was required and an opportunity for a written answer. No examination of witnesses nor any trial or hearing was required and until the Veterans' Preference Act of 1944, there was substantially no opportunity for appeal from the department to the Civil Service Commission. Veterans now have a right to appeal to the Commission in certain cases.

In 1947 it would consequently have been possible to provide for the removal of persons of doubtful loyalty with no hearing whatever, or to refuse employment to applicants on the basis of character investigation by the Civil Service Commission. These propositions stand on the principle followed by the Supreme Court that no one has a constitutional right to employment by the federal government, and by the common-sense rule that the government as employer is not compelled to hire or retain an untrustworthy employee. The seriousness of a disloyalty finding is, however, so grave that it is obvious that every possible protection should be given to employees or applicants against prejudice or error.

LOYALTY DEVELOPMENTS DURING WORLD WAR II

We return now to the development of the loyalty program in recent years. The rise of German Fascist groups and of the Communist party in the United States during the 1930's and the mounting international tension caused Congress, on the eve of World War II, to take precautionary measures. The Hatch Act of 1939 required the removal of any person employed in any capacity by the federal government who was a member of any organization that advocated the overthrow of the constitutional form of government in the United States.[3] The Hatch Act is still in force and is mandatory both upon employing agencies and loyalty boards.

On May 28, 1940, the Civil Service Commission announced that as a matter of policy it would not certify for employment "the name of any person when it has been established that he is a member of the Communist Party, the German Bund, or any other Communist or Nazi organization." This policy was incorporated in the War Service Regulations of March 16, 1942, denying appointment where there existed "a reasonable doubt as to loyalty to the Government of the United States." A special branch of the Commission was organized to deal with such cases, and as far as possible the character and loyalty of applicants were investigated. Several hundred persons were refused employment during World War II on loyalty grounds.

The continuance of international tension after the surrender of Germany and Japan and the gradual emergence of the "cold war" raised novel peacetime considerations in the field of national safety. The Canadian spy convictions strongly suggested that a new type of peacetime violation of domestic security, involving not only high military and political considerations but also the body of scientific and engineering knowledge of fissionable materials, had emerged.

These considerations led to a number of statutory and executive measures to safeguard the interests of the United States, only one of which, the loyalty program, is dealt with in this paper. They include, apart from the loyalty program, the grant of summary power to dismiss employees to a number of sensitive agencies; the general authority to exclude from employment persons believed to be a security risk; the investigations by the House Committee on Un-American Activities; the tightening up of passport control of citizens desiring to travel abroad and of the grant of visas to aliens desiring to visit the United States; and the creation of the Subversive Activities Control Board, established in 1950 to determine what organizations are subversive in nature and subject to various official controls. None of these agencies or activities is a part of the task assigned to the Loyalty Review Board and the agency and regional boards, which are organized solely to inquire into the loyalty of federal employees or applicants for federal employment. It is thus important to recognize the boundaries of the loyalty program.

The Internal Security Act of 1950 establishing the Subversive Activities Control Board requires registration of all communist action organizations and also all communist front organizations. Procedures to secure registration are initiated by the Attorney General; public hearings are required; cross-examination of witnesses is permitted; and judicial review of a finding requiring registration is provided.[4] The consequences of registration, among others, are to secure full disclosure of members, revenue, expenditure, and activities; to prevent members from holding any nonelective federal office or employment; to prohibit passports to members; to prohibit employment of communist-action members in a defense facility and their receipt of any classified information; and to disclose registration in use of mails or in broadcasting by the organization. Proceedings to require registration are now before the Board,

[3] 53 Stat. 1148 (August 2, 1939).

[4] Public Law 831, 81st Cong., 2d sess.

"I had as lief they would put ratsbane in my mouth as offer to stuff it with security."

—FALSTAFF, *Henry IV*

whose chairman, Mr. Seth W. Richardson, was formerly chairman of the Loyalty Review Board. No registration orders have yet been issued.

THE LOYALTY BOARDS

The present loyalty program is based on Executive Order 9835 of March 21, 1947, as amended by Executive Order 10241 of April 28, 1951, modifying the standard of judgment on loyalty matters.

Two separate but related operations were required by this Executive Order, one dealing with the loyalty of present employees as of October 1, 1947; the second dealing with the loyalty of applicants for employment. The former, a single task that has now been substantially completed, was assigned to the heads of departments and agencies assisted in each case by one or more agency loyalty boards. The latter, a continuing process, was assigned to the U. S. Civil Service Commission, assisted by fourteen regional loyalty boards. Appeal to the Loyalty Review Board against an adverse decision is open to either an employee or applicant. There is no appeal beyond the Loyalty Review Board on particular decisions.

To assist department heads in the task of ascertaining the loyalty of employees, a large number of agency loyalty boards have been established in Washington and in the field, approximately 200. They comprise usually three high-ranking permanent employees. They operate under rules and regulations approved by the Loyalty Review Board, substantially uniform in character. Some of these agency loyalty boards also serve as agency security boards. If so they operate under two charters. Their acts and decisions touching on security fall entirely outside the loyalty program, are not subject to supervision by the Loyalty Review Board, and may not be carried to the Board on appeal.

To assist the Civil Service Commission in determining doubt concerning the loyalty of applicants, there are fourteen regional loyalty boards located in different parts of the country in association with the Commission's regional offices. Each of these boards comprises from five to twenty citizens of high standing residing in the region in which they serve. They are part-time officers, and operate in panels of three on a particular case. Both the regional boards and the Loyalty Review Board are assisted by staffs of examiners.

The Loyalty Review Board includes 24 members appointed by the U. S. Civil Service Commission, men and women of high standing in their communities, representing principally lawyers, business executives and accountants, and members of university faculties. The chairman of the Board, former Senator Hiram Bingham, is also appointed by the Civil Service Commission. The whole Board meets at regular intervals, usually three times a year. Cases are heard in panels of three assigned by the chairman.

LOYALTY BOARD PROCEDURE

The method of operation of this large network of loyalty boards is governed by the organic Executive Order. Let us consider first the incumbent program. Each department and agency head was made responsible for ensuring the loyalty of all persons employed under his authority, an aggregate in 1947 of about 2,000,000. A check was made of each one of them, and in case derogatory information appeared a full field investigation was conducted by the Federal Bureau of Investigation. The results of the inquiry were then submitted to the agency loyalty board.

It is important to note that the F.B.I. is merely an investigative agency in loyalty cases, and nothing more. It makes no findings as to loyalty, offers no recommendations to the agency, and draws no conclusions. Its job is merely to assemble information and to lay the information before the agency for its analysis and evaluation.

Inspection of the F. B. I. report may reveal that the original cause for investigation was groundless, and the matter is dropped forthwith. If doubt remains, the employee is given a statement of charges in writing and an opportunity to reply in writing. The answer may clear up the case at this point. If not, the employee is given an opportunity for a hearing before the agency loyalty board, at which he may appear with an attorney or friend, and produce witnesses and testimony. The hearing may clear the charge; if not, the employee may next appear before the head of the agency or his representative for a second hearing. If the charges are still sustained, he may then appeal to the Loyalty Review Board for a further hearing, at which the complete file and transcript of testimony below is in the hands of the panel, and at which the appellant may again defend his record. If new testimony is offered, the case is remanded to the agency board for further consideration.

The same procedure is followed in the case of applicants for federal employment. The Civil Service Commission makes a routine record check of each applicant. If derogatory information appears, a full field investigation by the F. B. I. follows, the results of which are laid before a panel of the regional loyalty board. The panel may be satisfied at once that there is no ground for further proceeding and may then and there declare the applicant eligible. In case of doubt, the panel sends to the applicant an interrogatory, setting out the nature of the adverse evidence, to which he may make written reply. His statement may clear the matter at this point. If the response leaves doubt, a hearing is held by a panel of the regional board, from which, in case of an adverse finding, an appeal lies to the Loyalty Review Board.

It follows from this statement that an employee has at least three opportunities and an applicant two opportunities to clear his record, and that the final hearing is before a panel of the Loyalty Review Board quite independent of the agency board or the agency head, and of course equally independent of the Commission's regional panels. While the Loyalty Review Board considers the findings of lower boards as entitled to respect, the panels of the Board consider it their duty to hear a case on appeal not merely with respect to procedure but with regard to the substance of the case. As noted below, a substantial proportion of cases appealed have been reversed in favor of the appellant.

These hearings, it must be remembered, are for the purpose of deciding whether an individual is suitable for employment by the federal government. In the interest of the employee or applicant they are private, although a full transcript is recorded and made available to the party in question. The procedure is not that of a court. It was found necessary in the interest of national security to permit the investigating agencies, principally the F. B. I., to decline to reveal the names of its confidential agents and informants. The names of witnesses may be revealed in the course of hearings, but in many cases are not disclosed. Loyalty boards are under instructions to weigh this handicap in the evaluation of evidence and testimony.

The charges or letter of interrogatory are required to be stated as specifically and completely as, in the discretion of the employing department,

security considerations permit. This language leaves open the possibility of something less than full disclosure of the charges, but in fact they are regularly stated in detail and in full. Every effort is made to inform employees or applicants of all the adverse evidence that is contained in the file.

STANDARD OF JUDGMENT

The standard of judgment on which all loyalty boards operate, as recently revised, is that "on all the evidence, there is a reasonable doubt as to the loyalty of the person involved to the Government of the United States."

Executive Order 9835 of 1947 specifies a number of activities that may be considered by loyalty boards as bearing on the issue. They are:

Sabotage, espionage, or association with spies or saboteurs; treason or sedition or advocacy thereof; advocacy of revolution or force or violence to alter the constitutional form of government of the United States; intentional, unauthorized disclosure of official information under circumstances indicating disloyalty; performance of duties so as to serve the interests of another government in preference to the United States; membership in, affiliation with or sympathetic association with any foreign or domestic organization or movement designated by the Attorney General as totalitarian, fascist, communist, or subversive, or as having adopted a policy of advocating or approving the commission of acts of force or violence to deny other persons their rights under the Constitution of the United States, or as seeking to alter the form of government of the United States by unconstitutional means.

The Attorney General has published a list of about one hundred and twenty such organizations. The legality of the list is now in litigation, as noted below.

Membership in or sympathetic affiliation with any one of these organizations is not conclusive evidence of disloyalty, and indeed may not be evidence of disloyalty at all. It is simply one piece of evidence that may or may not be helpful in arriving at a conclusion in any particular case. Whether or not membership or affiliation was recent, whether or not it was based on understanding, whether it was disavowed when understanding came, whether individuals were active in an association or merely names on a membership roll, whether intent could be shown innocent or the contrary—all these are matters that sound judgment has to deal with in the particular case.

It is rare indeed for a single piece of evidence to be conclusive. Present membership in the Communist party, admitted or demonstrated on the basis of facts, would make an adverse finding as to employment mandatory under the Hatch Act. In general, conclusions have to be reached on the basis of an accumulation of evidence, no single piece of which would be sufficient but which as a whole, revealing activities and attitudes consistent with a general pattern of behavior, force a conclusion that a reasonable doubt as to loyalty exists.

RESULTS OF THE LOYALTY PROGRAM

The vast proportion of federal employees and of applicants for employment are honest, loyal American citizens against whom no breath of suspicion could ever be raised. The record of the loyalty board cases demonstrates how small is the number of persons about whose loyalty doubt has been found to exist. About 2,000,000 employees and over 2,000,000 applicants have been screened since the program went into effect. In about 16,700 cases enough derogatory information appeared to warrant a full field investigation by the F. B. I. About 6,000 of these were cleared on the basis of the investigation without the necessity for any hearing. About 1,890 employees resigned before their cases ever reached a loyalty board and another 1,750 left the service prior to adjudication.

Loyalty boards, as of September 1951, had adjudicated 9,654 cases, including both incumbents and appointees (applicants). Of these 9,090 were rated eligible and 564 were rated ineligible. Some of the latter dropped out of the service at once, but a large number appealed to the Loyalty Review Board. Of those who appealed, 208 were restored by a reversal of the finding of the lower board; thirteen were pending adjudication as this paper was written. Putting these figures in another way, 343 employees or applicants for employment have been denied employment on loyalty grounds from 1947 to September, 1951.

The constitutionality of loyalty requirements was upheld in *Friedman* v. *Schwellenbach*.[5] The case arose under the War Service Regulations of 1942 when, after hearing, the U. S. Civil Service Commission held that there was reasonable doubt as to Friedman's loyalty. The U. S. District Court refused to interfere with the decision. The Court of Appeals for the District of Columbia took the same view, declaring that, "The War Service Regulation which permits the removal from federal service of one concerning whose loyalty to the government the Civil Service Commission entertains a reasonable doubt undoubtedly was reasonable and proper and the making of it was well within the scope of the authority conferred on the Commission." The Supreme Court upheld the decision of the Court of Appeals.

The constitutionality of Executive Order 9835 has been challenged in the federal courts and sustained by a divided opinion of the Supreme Court in *Bailey* v. *Richardson*.[6] The district

[5] 159 F. 2d 22 (Dec. 16, 1946); 330 U.S. 838 (March 17, 1947).

[6] 182 F. 2d 46 (March 22, 1950); 341 U.S. 918 (April 30, 1951).

(*Continued on page 382*)

"It is the very basis and the great heritage of the English people to this country, which we have maintained, that we insist on the strictest rules of credibility of witnesses and on the avoidance of hearsay, and that gossip shall be excluded, in the courts of justice. . . . Whether by administrative agencies acting arbitrarily against business organizations, or whether by investigating activities of legislative branches, whenever those principles fail, those principles of the protection of an individual and his good name against besmirchment by gossip, hearsay and the statements of witnesses who are not subject to cross-examination—then, too, we have failed in carrying forward our ideals in respect to democracy. That I deeply believe."

—DAVID E. LILIENTHAL (to Senator McKellar)

THE RESPONSIBILITY OF A UNIVERSITY PROFESSOR

SAMUEL K. ALLISON

Dr. Allison, wartime director of the "Metallurgical Laboratory" of the Manhattan Project, is at present director of the Institute of Nuclear Studies at the University of Chicago.

WE ARE living in the most tragic century of human history. The inhumanity of man toward man has never been more pronounced than during the present time, when our greatly improved understanding and control of nature has to a large extent been used merely to find more effective methods of slaughtering each other. Our military men boast of "killer offensives," and the number of the enemy mowed down each day by mechanized weapons, or burned alive by jellied gasoline, is triumphantly displayed in thick black headlines in our daily press.

Our enemy, as well as those we are trying to help, indulges in the even more horrible practice of cold blooded mass executions in which miserable civilians, who have wandered in a daze through heaps of rubble which were their homes and towns, and have drifted from side to side in their attempts to exist, are shot down in droves. And all this seems necessary and inevitable. Sane men, recapitulating step by step the descent into the abyss in which we flounder, can convince themselves and others that each step followed inexorably from that one which preceded it, and that to be secure in our liberties no other course was possible.

In the scenes of the tragedy which are being played at the present moment, we find ourselves confronted with an expanding, dictatorial regime, in which a fanatical certainty of superiority of their organization of society is coupled with vast military resources. We fear that the Soviet regime may establish itself over the entire Eurasian land mass, and over Africa too, so that no ship can cross the ocean from our ports and be received on a friendly shore.

CRITICISM OF THE SOVIETS

Within the original territory of the Soviets, and in their recently acquired lands, there are violations of individual liberty which we consider intolerable, and concerning which we say that no end can justify such means. We can focus our criticism by stating that in the Soviets there exists neither the writ of habeas corpus, nor any legal procedure having the effect of this writ. This famous writ, a foundation stone of our liberties, makes it impossible that any person may be imprisoned by the action of a government official, or by any other single person, for that matter.

Under our system the destruction of one's liberty by confinement in a conventional prison, or by confinement to a location where forced labor is imposed, can only result from the action of a group of laymen carefully selected to make sure of a fair trial under the law. I do not for a moment claim that every trial conducted in the West has been fair, or that no one has ever been kept for a long time in detention awaiting trial. The important fact is that a very prominent and living part of our legal structure consists of regulations to ensure fair trials, and of laws to prevent unjustified emprisonment, and these regulations are vigorously applied whenever justified complaints are made.

Another way in which the apparently unbridgeable gap between us and the Russians can be illustrated is by their curious distortion of words. For instance, the Soviets use the words "free elections" but for them they mean elections in which everyone votes, to be sure, but in which there is no choice of parties. I am sure I do not need to enlarge further upon the vital differences between their ideas and ours.

We see these ideas held by a great military power, having a long and essentially undefended frontier with Western Europe, where the people think much more nearly as we do. If the technological facilities of Western Europe should fall, intact, into Russian hands, the balance of power in the world would begin to tip against us here in the Americas. It is literally true that at any time a small group of men in the Soviets can launch the huge Soviet armies on a march through Europe to the Atlantic, without preliminary public discussion with their own populace. In Western governments in continuous touch with, and responsible to, the people which support them, violent and unannounced action on such a scale is impossible. The ruling group in the Soviets knows this perfectly well, but their propaganda does not hesitate to pretend that the exact opposite is both true and possible.

BARRIERS TO COMMUNICATION

Perhaps the most serious aspect of this situation is the breakdown of any effective means of communication. Neither side has the slightest faith in the words of the other. Meetings held for the apparent purpose of negotiation and treaty-making become sterile sessions in which long propagandizing speeches extolling the Marxist ideology are made for the record. Nothing is accomplished except a recognition of the status quo, and only then if the status quo is so obvious it cannot be ignored. An agreement, or treaty, means far more than this to those who think as we do.

In all this I have said nothing very new, and have perhaps made statements in fields that should be left to trained politicians and diplomats. I am attempting to speak as a university professor, trying to decide what he should do at this time, and therefore I will now narrow the field of this discourse to the examination of the effects of the crisis on the universities.

IMPACT OF AUTHORITARIAN REGIMES ON UNIVERSITIES

A university is a group of scholars, that is, persons dedicated to the pursuit and dissemination of knowledge.

This pursuit of knowledge may consist in the search for historical or archaeological facts which contribute to a clearer picture of our past. It may involve the intensive study of the great poetry and music of the world, not only for the purpose of analyzing the structure of these works of art, but also to obtain information on the emotions and aspirations of the men who created them. It may involve the study of living and of inanimate matter, and the attempt to correllate the results into so-called laws of nature.

In all these endeavours, it is unthinkable that the scholar should have any other guide in his work than his findings and the reflections of his mind upon them, free from duress. If he has to consider that his conclusions must please some authority set over him, at peril of his livelihood, he ceases to be a scholar and his conclusions lose all permanent value.

In the basic physical sciences, it is possible to place more stringent requirements on the pursuit of knowledge. These are the following:

Only those data which result from the repeatable behaviour of physical objects are of interest.

A correlation of these data, i.e., a theory of nature, is only of interest as long as it continues to apply to new facts. The theory has no authority or validity other than the facts it correlates, in fact, nothing delights a physical scientist more than to perform an experiment which demolishes a theory.

No one gives more than passing mention to the vortex theory of matter, a rather elaborate creation of the first years of this century, in which atoms were purported to be ethereal motions such as we see in smoke rings. The theory failed to embrace new facts and faded away. Suppose, for contrast, that Shakespeare had written a critique of Homer's Iliad. No tests such as I have mentioned could conceivably be applied to such a document, yet it would be studied by scholars throughout the ages.

Under an authoritarian regime, university activities as defined above become impossible. The humanities and the social sciences are usually the first to be subverted. Imagine the fate of a Russian scholar who should find that in a certain village the material standard of living had been higher under the Czars than it is now, and taught and published such findings. Unfortunately, one does not need to go so far from home to find other illustrations. In the mid-western United States, university researchers have lost their positions for reporting experiments which showed that in certain respects oleomargarine products are as nutritious as butter.

Under Hitler's regime, the German universities were turned into sounding boards for Nazi propaganda. Anthropology and genetics were made to conform to current political doctrines. Whole sections of physics, such as relativity theory, were disapproved as erroneous due to their inferior racial origin.

In Russia, the destruction of objectivity in the conclusions of university scholars is well advanced. The most spectacular case seems to be the adoption of an official genetics which completely disregards the facts of biological inheritance. Curiously enough, this has happened in Russia, where a brilliant school of geneticists had contributed greatly to the collection of these facts, and the interpretation of them. N. I. Vavilov, the most eminent Russian geneticist of his time, who was elected president of the International Congress of Genetics in 1939, was arrested in Galicia in August 1940, and died in the deportation center of Magadan in northeastern Siberia, probably in 1942. The brilliant scientists, G. A. Levitsky, G. A. Karpechenko, S. Levitt, J. J. Kerkis, and N. W. Timofeef-Ressovsky were arrested and imprisoned several years later. Writing on this matter in the spring of 1949 Professor Dobzhansky of Columbia University states that nothing is known of the fate of these men. No writ of habeas corpus exists by which the impenetrable veil surrounding them can be pierced.

There is thus ample evidence to show that the lights of the universities would be the first to be extinguished if the fog of political fanaticism should roll over us. In resisting the expansion of authoritarianism, the universities are reacting to a danger which concerns them fully as much as it threatens other institutions in the world we know.

To Our Subscribers

The Editors of the Bulletin *wish to apologize for the late arrival of the October issue.*

An unprecedented situation in the offices of the agency which handles the distribution of the Bulletin *caused a delay in the mailing of the October issue by three weeks. We have been assured that this situation will not be repeated, and would like to thank our readers for their patience and indulgence.*

UNIVERSITIES IN THE RECENT WAR

There is also ample evidence that the universities can contribute powerfully to the defense of a country both before and after the outbreak of a shooting war.

Modern war is the most wasteful, the most diversified, and the most demanding of all human activities. It draws on, and perverts to its uses, every field of human knowledge. In the recent conflict, the universities were invaluable as reservoirs of highly trained specialists.

The services of physicists in the recent war have perhaps received too much publicity. Nevertheless it seems true that there is something in the training of the research physicist which fits him for the type of rapid improvisation demanded by war. One of the characteristics of experimental physical research is the continual appearance of unanticipated difficulties. On the whole the work is far from being routine, and the constant surmounting of difficulties is achieved by a combination of ingenuity and theoretical calculation. It is the ability to act and think in this way which seems most valuable in the technology of war.

The importance of physics and physicists in the recent war was such that, practically speaking, advanced physics instruction in our universities was shut down for the duration. Entire physics faculties were engaged in full time in war work. After V-J day, when the public first became aware of physics due to the spectacular advent of the atomic bomb, it considered that great progress had been made during the war. Actually, physics practically stopped as a scholarly activity during that period while physicists were applying the techniques of their profession to the practical problems immediately at hand. The search for new information concerning fundamental problems of matter and energy, which is the essence of the science, was abandoned. We are in danger of sinking to a similar level in the present emergency, as I shall point out later.

PHYSICS AND WAR

An undesirable corollary to these achievements has been the identification of physics and war in the minds of many military men and legislators. Many people take it for granted that

the Institute for Nuclear Studies at the University of Chicago operates behind guards and locked doors, and are amazed to find that it is as open as any other university activity. There we are exploring that strange, high-energy region where mass is a rapidly varying function of velocity, and its creation from radiant energy is commonplace. New electrical charges are dredged up from the all pervading but invisible sea of negative electricity, and the holes left behind in that ocean move and act like positive electrons. Short lived atomic species, extinct since their birth and death in the opening hours of our epoch, three thousand million years ago, are re-created and examined.

Charcoal from the fires of primitive men is tested for its age, using the time signals of a radioactive clock buried with the wood 10,000 years ago, and whose ticking can still be heard. These activities are typical of basic research, and are part of the quest for important fundamental information concerning the world about us. Young men work with us there, and are trained in the techniques, and, what is more important, in the mental attitudes of the scientific investigator. They go out to positions throughout the Western world, adding to its tradition of freedom and its reserve of technical personnel. This is simply part of a university in operation, and we are always willing to discuss our work with any of our colleagues who can appreciate its problems and enjoy its results.

One of the responsibilities of a physicist is to publicize the truth that physics is an absorbing intellectual adventure and a worthy activity of the human mind. A physical laboratory is not a foundry where the swords of war are given a better cutting edge.

BASIC QUESTION OF THE TIME-SCALE

We now come to a direct discussion of the responsibilities of a university scholar at the present time. It is not a normal time; the President of the United States has proclaimed that a national emergency exists. It is not peace, but is it war? Is the outbreak of a major war so certain that we can compare 1951 with 1939? If there could be definite answers to these questions, our course of action would be much easier to chart. In fact, the lack of such an answer is the very center of the difficulty of these times, and I am sure that the Russian Government knows that one of the most potent weapons in their arsenal is just this ability to keep us off balance by alternately acting war and talking peace, not to mention that they are also capable of doing both simultaneously.

Every responsible spokesman of our government who has mentioned the subject at all has completely closed the door to a preventive war, initiated by the West. We have thus necessarily handed to the Russians the advantage of the initiative.

This means there is no choice for us but to re-arm and plan as best we can to fend off an initial blow, if and when it comes. On rearmament, all are agreed. But rearmament for a war that may break out in a few months, and rearmament to make us strong during a fifteen year period of uneasy peace are quite different.

At this point one must attempt his own estimate of what the emergency means, and then consider what he can best do to help strengthen the country. If the prospect is immediate war, peacetime activities should be largely abandoned, and an all-out effort be made for the production of such weapons as are now designed, as well as the improvisation of new ones. Many persons whose judgment must be respected feel this to be the case and have already largely laid aside their civilian activities, working full time for the defense effort.

Others feel that we will have the prolonged emergency, perhaps not terminating in war, and that in taking steps today we must also consider to what extent they will strengthen or weaken this country fifteen years from now. It is with this latter view that I find myself largely in agreement. The Russian dictatorship, to my mind, is in a significantly different position from that of the German or Italian dictatorships with which we had recently to cope. Hitler was in control of a densely populated country which was bitterly resentful of defeat in a previous war, and he could also point to the fact that many Germans were living under governments alien to them.

The desire to incorporate and expand was very strong. In Stalin's case, his territory is vast, and needs intensive internal development. There could well be, in Russia, a period similar to that experienced in the United States for the twenty-five years following the civil war, when the entire national effort was internally directed to the development of our latent national resources and the opening up of the western half of the country. There are no Russians, at least of the type favored by Stalin, who live under alien domination and need repatriation; on the contrary, Stalin has insulated himself from the world in many places by a belt of buffer states which have reluctantly been forced to install communist regimes. A march into western Europe would certainly mean the immediate outbreak of a full scale war, terrible beyond all comprehension, but there is little evidence that it is on Stalin's schedule for the immediate future.

RESPONSIBILITIES FOR THE LONG TIME EMERGENCY

Looked at from the expectation of a fifteen year period of tension, continuation of the normal activities of the universities seems to me to be highly defensible, for I believe it may well be argued that such activities are powerful contributions to the mental as well as the physical strength of the country.

It is supremely important, over the next fifteen years, that the universities remain centers from which calm and unprejudiced evaluations can be made. To an increasing fraction of the public the university professor stands as the symbol of unbiased judgment, of opinions expressed without pressure or duress. It is the responsibility of the professor to see that this is in fact the case. In the present hysteria, however, such a position is becoming more and more difficult to maintain. In the western United States we see one of our great universities being torn apart by the demand of the regents for a special oath as to

one's belief in communism. Superficially, such a requirement is demonstrably bad, as I shall try to make evident, but in a much deeper sense it is a crude and, I believe, ineffective attack on a very real problem.

If we shut our eyes to the deeper implications of the oath, it appears to be a statement that the faculty member does not believe in, i.e., approve of, communism. Communism is a political, economic, and social system for the organization of human society which has many fanatical advocates, but which most of us think is highly unsuited for nations with our cultural heritage. But it is the essence of scholarship, as I have defined it, to examine communism, compare it with other forms of social organization, assess its weaknesses and its strengths, and come to some conclusions concerning its desireability. No such study is possible to a professor who has, by oath, in advance, announced his lack of approval of the system which will come under his scrutiny. Therefore it is impossible, again taking the oath as stated in its superficial sense, for a scholar of complete integrity to subscribe to the required statement.

However, and unfortunately, the problem of the oath is not so easily dismissed. It has been established by too many individual cases that persons who believe in, or approve of, communism have given aid and comfort to the communistic dictatorship whose first act, if in control, would be to abolish those university freedoms which we prize so highly. The incredible cases of Alan Nunn May and Klaus Fuchs are examples. There are cases in the United States of university professors who gave false information concerning their membership in the Communist party. To a person in a position of intellectual trust, i.e., a professorship, there are three possible alternatives when the membership question is asked. One replies yes or no, as the case may be, or one exercises his indubitable right not to reply at all. The fourth possibility, of giving false or misleading information, does not exist.

In view of cases such as this, it cannot be said that the popular meaning of the word "Communist" is altogether wrong. To the public, to speak of a man as a Communist is not merely to state that he is an advocate of a certain social system, but is to state that he is a person of no integrity, who will betray his friends and his country given the opportunity. When the cry is raised "Get the Communists out of our universities," what is really meant is that persons who will not tell the truth, come what may, and who may aid our enemy in time of war, must be kept out of positions of intellectual trust. It is again clear that the required oath or statement will fail completely in this laudable aim. Exactly those persons whose detection and elimination is desired will be the first to sign the oath, since they, by definition, are those whose word cannot be trusted. The problem, however, is still with us.

COURSES OF ACTION

I am unable to formulate a completely satisfactory solution to the difficulty. In certain areas, however, the course of action is clear. There are some universities where projects are underway concerning the details of military technology, and such projects are, quite properly, of a secret nature. In normal times it is my opinion that no university should accept such projects, since the practice of secrecy is exactly antithetical to the basic purposes of a university. However, in the present emergency, more and more such projects will be undertaken by university personnel. It is clear that access to the information acquired in such projects must be denied to persons whose loyalty and reliability are questionable, and, as I have stated above, there appears to be a correlation between advocacy of communism and the occurrence of such character faults.

On the other hand, one of the prime functions of a university is to recognize and protect genius and exceptional ability. It is often true that these qualities enable a man to be superlatively effective in his field of specialization and yet will not protect him from embracing a political dogma such as we have been discussing. It is my opinion that such persons should not be insecure in their university positions because they hold such beliefs. They are, of course, subject to the law, as we all are, for their acts or perjuries, if such are committed. The law, however, says nothing about guilt by association. The presence of guards, and the necessary regulations concerning projects which should be kept secret are there for the very purpose of maintaining a line of demarcation, and if they fail to do so, their procedures should be scrutinized. The criterion for the retention of university appointments in research and scholarship should be the ability and competence of the man in his specialty, and his competence should be judged by other specialists in his field.

RESPONSIBILITY FOR TEACHING

If one adopts the fifteen year emergency point of view, one must look very seriously at any interruption of the training of students. It is obvious that the student of today is the mature scholar of ten years hence, and, according to my thinking, it may be ten years hence that we will need him most. In my own profession the shortage of trained men, caused by the abandonment of academic physics in 1941, became acute in 1945 and is only now beginning to be filled. Furthermore, it is my opinion that students cannot be properly trained in secret projects. Provision must be made during the emergency for maintaining this training, and its continuation is one of our obvious responsibilities.

On the other hand, it occasionally happens that the defense effort is confronted by a problem which the scholar is uniquely fitted to attack. He may be the only person available, or one of a very small number of persons, having this knowledge and background. In such case, I believe the individual, when called, is obligated under the emergency to contribute a part or all of his time to such work, leaving his university duties to be carried on by others. What should not happen is that professors should leave their work to re-orient themselves in a new, perhaps only vaguely familiar, field. This was justified in the recent critical emergency when we were fighting wars across both oceans. Then biochemists dropped their organic chemicals and learned uranium chemistry, physicists learned meteorology, and psychologists groped for criteria by which persons best suited to espionage might be found. Then, as I have mentioned, whole fields of scholarly activity were swept clean of personnel to produce a spurt of effort beneficial for a year or so but very harmful in the long range point of view.

And lastly, but far from least, it is the responsibility of the university professor to expound and defend the doctrine of freedom of thought and enquiry. The universities have, through conflicts over a period of a thousand years, established their right to be the citadels where these virtues are preserved. Now again, today, they must stand firm against all forces, domestic or foreign, which seek to destroy what has been won at such a price.

A SYMPOSIUM

THE DUTY OF THE SCIENTIST IN SOCIETY

For the following articles the writers were asked to appraise the present position and responsibilities of "the scientist" in present-day society. This of course is a subject the Bulletin *has discussed before and will discuss again. This series of articles will be continued by other writers, both laymen and scientists, in later issues of the* Bulletin.

"SCIENTISTS ARE QUITE ORDINARY FOLKS"

A. V. HILL

Although Mr. Hill rejects the notion that scientists have any special competence in public affairs, his personal record might indicate that no rule is without an exception. He is distinguished in public life as well as in science. His work in physiology won him a Nobel Prize and his interest in politics, a seat in the House of Commons, where he served as Independent Member for Cambridge University from 1940 to 1945. Professor Hill is an Honorary Fellow at University College, University of London.

I DO NOT believe that there is such a thing as *"the scientific mind."* Most scientists are quite ordinary folk, with ordinary human virtues, weaknesses, and emotions. A few of the most eminent ones indeed are people of superlative general ability, who could have done many things well; a few are freaks, with a freakish capacity and intuition in their special fields, but an extreme naïveté in general affairs. If these latter, in Einstein's phrase, were put to do their work in lighthouses in the intervals of tending the lights, one would feel sorry for the poor sailors who had to trust to them!

The great majority of scientists are between these groups, with much the same distribution of moral and intellectual characteristics as other educated people. By and in their scientific work they have developed the habit of critical examination, but this does not save them from wishful thinking in ordinary affairs, or sometimes from misrepresentation (even occasionally from treachery and falsehood) when their emotions or political prepossessions are strongly enough involved. Their minds are no more amoral (and no more moral) than those of surgeons, soldiers, scholars, or bankers. As investigators, their job is the improvement of knowledge, and most of them realize that their function would be stultified were they to introduce moral data into a scientific argument.

A surgeon is not required to consider whether it would be better for the world if his patient died under the operation; he needs only to carry it out with skill, care, and integrity. The decision, of course, to become a surgeon instead of a clergyman, a politician, or an explorer, involves moral considerations as do all human judgments. The decision to study tropical medicine instead of nuclear physics may similarly involve moral considerations, but if the result, by increasing population in backward countries, is famine and war, the moral judgment may prove wrong after all, though made in good enough faith.

One consideration only in this connection I would urge, that scientific people do not get an exaggerated idea of their importance, or of their moral superiority, but regard themselves as citizens who have the same moral obligations of honesty, kindness, courage, and tolerance as others. They have no more right to insulate themselves from the common affairs of life, or the common obligations of citizenship, than have other people. If they have political aspirations, or a mission to improve mankind, let them follow these as citizens, not claiming scientific fame or notoriety as justification for public pronouncements on unrelated matters. The integrity and prestige of science are common property and must not be

exploited for selfish ends. And scientists should be implored to remember that, however accurate their scientific facts, their moral judgments may conceivably be wrong.

I doubt whether the new importance which natural science has acquired in industrial, national, and international affairs, with the inevitable consequence of restriction (in certain fields) of completely free exchange, is a serious deterrent to able young people from entering science as a profession. The field of science is vast, and those who wish can keep out of the special fields where government, or industrial, secrecy prevents free discussion and publication. I should regard as rather hysterical a youngster, with good scientific ability, who was deflected from science simply by fear of secrecy—if indeed one did not conclude, rather, that he really wanted to do something else and was giving a fashionable excuse.

LARGE SCALE ORGANIZATION

It is extremely important to maintain the smaller independent units, as places where people of special ability can follow out their ideas. The essential thing is that the decision about such matters should ultimately rest with scientific people with personal experience of how scientific discovery is really made and current acquaintance with their younger colleagues. With the present importance of science, organization cannot be avoided: But if those who have to help in steering it have a sympathetic understanding of their colleagues, and of how scientific advance is really made, no great harm will happen, and, on the whole, the right kind of people will find the opportunity they need.

The British tradition, of very long standing, is of friendly cooperation between independent people and institutions on the one hand, and government or industrial organizations on the other. This cooperation is general, not limited to the scientific field; and it would be a major disaster if it disappeared under the influence of "planning"—but I do not think it will.

No, I do not anticipate general dislocation or frustration because of secrecy or limitation of free exchange—unless major political changes occur, which do not seem likely. Those who find their special conditions of work irksome can easily take to something else: If they cannot, they must have a poor capacity for adaptation and so, almost *ipso facto*, be rather second-rate people.

ABANDONMENT OF SECRECY

In the practical world, as it is likely to exist for a long time yet, complete abandonment of secrecy (in government and industry) is quite out of the question. Instead of demanding the impossible one must try always to achieve the maximum of freedom and exchange, by emphasizing (*a*) the advantage to international relations, (*b*) the advantage to scientific progress itself and (*c*) the impossibility (in a free democracy) of keeping the best people unless the conditions of their work are reasonably congenial. Of these, (*a*) and (*b*) will appeal to the idealist, but (*c*) will appeal to the practical man who wants to obtain the best results.

If scientific people consistently avoid, or give up, jobs in which the conditions are too uncongenial, they will force changes of organization so that only really necessary secrecy is maintained. The penalty for filling a government (or industrial) organization with second-rate people, cheerfully amenable to unnecessary restrictions, is far too evident in its effect on efficiency to be tolerable for long. The cure, therefore, is largely in the scientists' own hands.

INDEPENDENT OR "USEFUL" RESEARCH

We want all kinds of research and preferably free and frequent movement from one kind to another. It does a man no harm, indeed in many ways it does him good, to work for a while on "research of recognized national or international usefulness." It does the universities and free research institutions good to have men come to them with the previous wider experience of research in industry or under government. It does industrial and government research good to have a steady interchange of experienced people with academic institutions. Pension schemes and other conditions should be adjusted to this end. What is important then is that the outside institutions remain genuinely independent. The price of freedom is perpetual watchfulness.

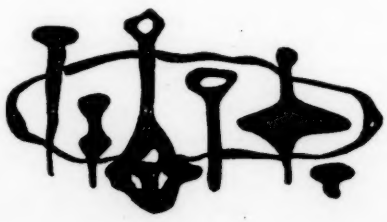
GENERAL COMMENTS

The virtues to be cultivated by a scientific man are courage, integrity, friendliness, and humility: Courage, to insist on the value both of ascertainable fact and of its logical consequence; integrity in experiment, in argument, and in criticism; friendliness to ensure that research, so far as possible, is of concern to every reasonable man anywhere; and humility to provide a consciousness that one may conceivably be wrong and the other man right.

These virtues are partly inherent and intuitive, but nourished by one's environment of home, friends, teachers, and colleagues—and by the high tradition of science itself. But in days like these when the public importance of science and its popular esteem may turn some people's heads, it is well that scientists should remember two things—that these virtues are not at all their unique possession, but that other callings demand them just as insistently—and that the prestige of science is not their personal property, but a sacred trust which they have an obligation to pass on uncompromised to their successors.

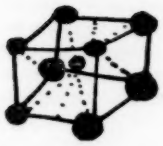
One cannot make people happy or virtuous by legislation; one cannot produce scientific discovery by planning. Laws and plans are indeed necessary, but they are futile without the moral impulses and restraints that govern the behavior of any healthy community of men. As citizens, scientists have the same moral obligations as others. And as citizens of the world it is up to them to look critically at their own actions whether as citizens or as scientists.

It is quite impossible to lay down general rules of conduct governing human behavior, whether of citizens or of scientists, or of any sort of specialist; but one can be sure that general happiness and healthy development are possible only if people make a habit of examining their consciences and actions and recognize explicitly the need for an ethical basis of their conduct.



II

"SCIENCE IS ESSENTIALLY SOCIAL"



PHILIP MORRISON

Dr. Morrison, of the Physics Department at Cornell, is almost equally well known for three things: his scientific work, his lucid prose style, and his political activities. In this essay he attempts to place the duty of the scientists and the role of science in society in a perspective beyond those issues which today divide science and the world.

IT IS hard to find any activity of men more cumulative than is science. Compare it with creativity in art. The painters of the Dordogne caves were masters of their art; their bison are still beautiful after twenty thousand years, and the artist of today may or may not build upon their work. But, for example, the work of their near contemporaries, the proto-geneticists of the neolithic, those who first bred cattle, stands as indispensable background for the science of biology in our time.

Science, more than most other pursuits, is an essentially social, and historically a tightly-bound activity. "The literature" is the scientist's milieu. Even more than the tradition and the starting point of all his thoughts, his society furnishes the scientist with his tools, his laboratory.

It is a long way from the girls deftly spot-welding tube parts on an assembly line in Camden to the Berkeley lab. Yet without tubes by the gross for his circuits the high-energy physicist would be lost. The growth of our understanding parallels in a neat fashion the growth of the power of industrial productivity. In our day the many-stage electron multiplier is less of a drain on the mind and hands of the physicist than a century ago was the few hundred feet of insulated wire which Joseph Henry had to wrap by hand.

There are two aspects of science as we have spoken of it. They might be called the science of without, and that of within, or the social and the personal. The scientist in action comprises both; his work in the long run adds to the productive power of technology (or at least modifies it, if he is in the bomb business), but also his work is for him a way of life with drives and satisfactions like those of the artist or of many other creative workers. His duty cannot be evaluated without his duality in mind. But at one limit a disclaimer must be entered. True, the subjective goals of the scientist may be shared by a chess champion; yet there is an openness in the future of science which seems to me to make it more than a marvelously satisfying game, even on the subjective level. Science deals with the world of experience, a world so rich and diverse that its travellers have no less than an infinite itinerary in mind. No other activity paints upon so great a canvas, and the satisfaction of the scientist must in his reflective moments at least come from the very wonder of the world of matter and of men. In his duties this ought not to be forgotten.

On the staff of his Utopian laboratory, Salomon's House, Sir Francis Bacon counted "three that collect the experiments of all mechanical arts." They were called mystery-men and were employed to search out the mysteries of the craftsman, the technologist, to enrich science. Potter and cheese-maker might perhaps still teach the Royal Society much, but by and large the current has turned around. Instead, technology, industry, learns from and is built upon science. Especially is this true for the newer great industries, the electrical and chemical industries.

THE ATOMIC INDUSTRY

In the atomic industry there never was a rule of thumb or a commonsense practice; it is a genuinely scientific industry born in the laboratory. Here is the rub. A major *raison d'être* of the *Bulletin* itself is some feeling for the duty of the scientist which flowed from the contribution science made to industrial technique during the last war. For unhappily there is a growth of destructivity, not only of productivity, in an industrial complex fed by science. It is the perversion of every humane sense by the sight of new weapons which has hurt. But it was neither novel nor unexpected except in scale; weapons and productivity have always gone hand in hand. Gunpowder and navigation were partners in the rise from feudalism.

It is not the fact of new weapons which ought to inspire the social duty of the scientist; it should be rather his determination to make conscious and intelligent use of the new forces, not to allow their blind manipulation by the legacy of the past. Nor need he find any shame in the new powers over nature. Even if in our rich and productive land we forget in part the bad times of not so long ago, there are whole continents lying in poverty, whole new societies still to be built into a century of science. Even in our country there lies ahead a time in which new technique might make the repetitive and monotonous work of the mind, the work of the assembler, machine-tender, file-clerk, as obsolete as the back-breaking toil of the hand-reaper has become in our own well-equipped Iowa. History may well view our times as those in which the techniques flowing from scientific inquiry were important for the course of social development. Once it was the steam-engine, the work of a scientific instrument-maker, and the fruit of natural philosophy, not of engineering practice, which gave impetus to the explosive growth of British industrial capitalism.

The first duty of the scientist, then, is to do his job. He will be adding to the eventual productivity of human work in a way and by means which are ordinarily beyond his control, and

perhaps beyond foreknowledge. He can claim the inner satisfactions of the work of science itself, and yet be secure in the belief that his work will stand for growth. This is not in the least to justify smugness, indifference, or complacency; they do not befit this *Bulletin* or its essayists. But it is to state a warm and living faith. The outcome of scientific research, while a hard problem, is not in principle beyond all conjecture. Indeed it may well be that a prime duty of science as a whole, and therefore for some scientists, is the spread of rational inquiry into the consequences of technical innovation.

Operational research represents a thin end of this sort of wedge, which could be extended to imply the wider use of devices of social planning. It is of course much easier to state such general goals than effectively to set about them, or to see how to do anything at all in the complex and terrifying jungle of politics and pressure into which the naive physicists have so fearfully pushed during the last years.

Perhaps closer to the heart is the duty of a scientist to defend science itself, to demonstrate both its inner and its outer worth. In a time when a tendentious best-seller pokes fun at the good and the bad of science alike, and when pseudo-science sells a fantastic and fraudulent astronomy in the most literate circles, this duty is not so easily shrugged off. At the New York meetings of the Physical Society last winter, it was not hard to find on the subway railings little blue stickers, paid for and distributed by earnest and spontaneously-acting volunteers, which pointed out that "Science has invented . . . a small jar of Bacteria that will wipe out a nation . . . but no cure to save one soul from cancer." No politics, no exhortation. Just the number of a P. O. box, where you could get fifty stickers free, and a one-sentence attack on the paradox of an inhuman science.

This is a small straw in a time when the military budgets wax fatter and the labs grow bigger and a little more classified every day, but it is not an unimportant one. If we think on the time scale of generations, we will see that we cannot afford to let our science bear the burden of the ills of the whole of the society of which it is one of the most hopeful parts. The argument of the stickers is not hard to oppose.

A scientist needs to associate himself with the tradition and, above all, with the practicality of tolerance, with the demonstrated deep-going similarities of all races, nations, and conditions of men, with the ability to understand and to evaluate fairly the coming of change and innovation, with the possibility of a rational study of man and his society, even of a study of its irrationality. For all these are part of the working values of a research worker. Science can be for a scientist the source of a set of values, the basis for an ethics of man and his progress. It is not the colorless technique, the blind and willing tool for any tyrant, which the superficial and the cynical find it.

THE DUAL GOALS

There is no purpose in pushing the reader into such beliefs; they could not appear in the *Physical Review*. But that they are sound ones, that they contain hope and reason, that they imply a high obligation, is my personal view. The dual goals: on the one hand, of a world free from famine and disease, fruitful beyond all poetry; on the other hand, of a society founded upon understanding and enthusiasm, and freer daily from the superstitions and the fear and the hatred

of a long history of pain and growth—these are great goals. There is a foundation in an eastern university which declares its desire to "follow the truth wherever it may lead . . . in devotion to human welfare." It would be hard to state a better aim for science. Only the cynical and in the end the unscientific will assert that the words contain a *non sequitur*. That is a scientific credo.

Of course a disclaimer is now needed. Science is in the best sense, I believe, key to the whole culture of our modern world, that general culture which exists in its different and presently contesting forms along the Potomac, the Volga, or the Yangtze. But scientists are only the special professional exponents of their way. What will count in the end is not their acts alone nor their understanding of their duties, however deep, but the degree to which the general ends of science can gain adherence among the people as a whole. No small and individual group of elite will fashion history; it is hard to see how by themselves scientists could even maintain the chance to do their jobs.

It is the opinions of men and women, the opinions built on their experience with science and the scientists, which will in the long run be decisive. This implies the duty of exposition, already partly accepted in the traditional, deep, and welcome connection between research and teaching. It implies still more a vast widening of the circle of the interested. It carries as well the admonition that the scientist must *even in pursuit of his science* be a citizen, an aware, responsible, and earnest one. He must be committed before all men to the aims implied in his work.

Today I cannot see how he can escape the responsibility to speak up as a citizen for peace and for rationality. No society is eternal save that of the dead; this is a fact of science, not a mere opinion. It is the consequence of that fact which ought to motivate him to seek a solution to our problems. It is all too clear that such a solution cannot begin with a noisy demonstration of the state of knowledge of thermonuclear reactions! What the outcome of isolation from his countrymen can be, what can be the cost to the scientist and to science of evasion of his responsibility as a citizen, is told in the story of the fate of the magnificent physics of Weimar Germany, and is harshly illuminated by the biography of the brilliant and sophisticated wartime German physicist who began for a while the rationalization of astrology.

If science is not conscious of ends something like those of the Terry Foundation, cited before, it will deserve the bane foreshadowed by the little stickers. And there is a fair chance that it will get it. The armorers may be skillful, and still not win. Indeed, their very victory may leave only a Pyrrhic ruin of rubble and a world opinion hostile to such bitter progress. But it need not go that way. The optimism and the hope and the assurance which the nineteenth-century scientists knew has not passed to their grandchildren. Yet the loss is a needless one. There is still great hope, there is vast promise, founded not on the naïveté that man is inherently good, but on the surer premise that he can understand, and, understanding, improve himself. The green and pleas-

ant lawns of Victorian country-houses, and the wonderfully calm retreat of a Darwin grew from cruelty, famine, and oppression upon which the sun did not set. We know that today: but we know fully as well that there lies ahead the power to end such unevenness and instability, by multiplying the physical and the mental creativity of man.

* * *

There is an old tale of the Buddha, who sought to relieve the agony of a young mother whose infant had died. He did so by bringing one by one to her door all the people of the village, that she might see how sorrowful was the general lot of man. In her pity, in her desire to help, in her new wisdom, her sorrow was assuaged. That is the way of old Asia, and a way not without deep appeal. Surely also the Christ of the Gospels might in His compassion have been moved to restore the infant by a miracle, built upon the mother's strong faith. That is the way of Christianity, leading still our culture.

There is no scripture for the way of science: we are not told how the thing happened. But it might have been that there was penicillin in the village, given to the sick child just in time, or indeed that the well water had been condemned a month or two before, and the whole village cleansed. That is a great way too. It is great, not simply for the almost vulgar wonder of the drug that cures, nor yet for the drab and reasonable administration of sound measures of public health. These are but its fruits. The living root of its greatness is faith and hope in man, in his understanding, his curiosity, and his power, in his oneness and his growth. To stand in our bitter days for that spirit is the duty of a scientist.

III

WORKING FOR A SOCIETY WHERE SCIENCE CAN THRIVE

N. F. MOTT

Dr. Mott is professor of theoretical physics and director of the H. H. Wills Physical Laboratory at the University of Bristol. He has been active in the work of the British Atomic Scientists' Association and is a former president of that society.

AS CITIZENS of free countries scientists are bound to share the political divisions of the countries in which they live. Although as citizens our duties are many and diverse, we are scarcely more likely than other members of the community to agree on what they are.

But as scientists we agree on one thing. We agree that science should be carried on effectively and not ineffectively. And here we carry the community with us. The man in the street may not welcome all the results of research. He may wish—and many scientists with him—that the atomic bomb had never been thought of. But he will know that in a competitive world a healthy science is vital and that a country that has not got it must be outclassed in power and influence by countries that have.

So, in countries that aspire to world leadership, our first duty as scientists is to see that the right conditions exist for the progress of science.

What then are the conditions in which the scientist can do the best work? I will consider first the research worker in fundamental science. The conditions that he needs are rather different from those needed by the applied scientist, whose job is essentially to make things work. I think that some confusion has arisen by not separating the two.

PURE RESEARCH

The function of pure research is to uncover new facts, which will increase our understanding of nature. It is a truism that on the pure research of today depends the technical applications of tomorrow. Pure research in advanced industrial countries has therefore become an activity to which a significant proportion of the nation's resources of intellect and material are devoted. From every point of view it is our duty to see that conditions exist in which these can be properly used. Now almost every scientist who has contributed anything worthwhile to his subject will agree that the free exchange of information is the lifeblood of pure research.

It is perhaps the special excellence of science in the Anglo-Saxon countries that this exchange of science is so free. In the United States or in England, if we have some new results, if we have an idea, we go and tell the man in the next room. We hurry off a note to the *Physical Review* or to *Nature*. We aren't jealous of ideas; we aren't afraid of other people stealing them. I have heard visitors from the continent of Europe say that that is what strikes them most about our science. It is an excellence that we should not throw away.

In fact, in fundamental science the arguments for the free exchange of information are overwhelming. Many of us—perhaps biologists especially—who have not yet seen their science used for destruction, advocate it because the benefits of science should be for all to share. Others feel that in the present world, and in physics especially, this is pushing generosity too far. But whatever may be thought of arguments such as these, I am convinced that any nation which impedes the free flow of ideas, by restricting publication or preventing travel on the part of its scientists, will hurt itself much more than it will hurt its competitors. I believe that nearly all scientists would subscribe to this; but it cannot be emphasized too often.

PURE SCIENCE AND LOYALTY CHECKS

Though this is much more controversial, I believe that the effect of loyalty checks on the vitality of pure science is wholly bad, and that science could contribute more to a country's national strength without them. The reason is that physicists, to do their job, have to look critically at accepted ideas. A first-class physicist,

the sort on whom the status of physics in a country depends, is a man who doesn't take things for granted. He has to look critically at accepted doctrines in his own subject. Probably there are doctrines or institutions in his country that seem to him wrong, and that he wants to change. This is his form of loyalty. If men like this are scared away from physics by the threat of loyalty checks, so much the worse for the country that does it.

It was rather horrifying to read in the May number of the *Bulletin* the remarks of Gordon Dean that the Fuchs case was in some ways a blessing in disguise, as it has made scientists more security-conscious. Opinions differ about the actual value of the information transmitted by Fuchs, but it was certainly substantial. However, it must be very rare that there is such a gap between the achievement of one country and another in a development of military value as there was in atomic energy at that time, so that such valuable information could exist to be given away. Security-consciousness engendered by the Fuchs case may prevent from time to time the further leakage of certain bits of information, but it has also enormously increased suspicion of scientists by other members of communities and also suspicion between allies, all of which hinders the most rapid development of our scientific strength.

APPLIED RESEARCH

Turning now to applied research, the position is rather different. The essence of applied research is not to find out facts about nature, but to make things work, and if these things are weapons of war, whether atomic or otherwise, to declaim against secrecy is crying for the moon. We shall not get rid of secrecy unless we can get rid of war; nor will protesting against secrecy help us to get rid of war. And in industrial research too, a firm cannot be expected to tell its competitors what it is developing; in a country of free enterprise it is no good asking for that. And even in socialized industry, in socialized steel such as we may have in Britain, I wonder if half the fun won't go out of research projects—the development of a heat-resisting alloy for instance—if the task is no longer to do it better and quicker than the rival firm.

I think that on much of this most scientists will agree. But there are other points on which we won't. I do not believe that on the great issues of our day there can be such a thing as a scientific point of view. I do not even believe that there ought to be.

Science is a means of acquiring power over nature. Scientific laws give us knowledge of the external world which tells us how it behaves, and thus they enable us to control it more closely. But they do not tell us what we ought to do with our power. They do not begin to answer certain questions.

One of these is this: If you believe in the Western way of life, and are resolved to defend it from attack, are all means justified in defending it, even the mass bombing of cities? Or if you believe in a communist organization or society, are all means justified in bringing it about, including the disruption of societies by lying propaganda? These are questions which have to be answered according to each individual's ideas of right or wrong, religion, or call it what you will. Science has little to say about them.

POLITICAL BELIEFS

Among scientists, as in other intellectual groups, there will be some who hold extreme political views, Communism, for example. In spite of the publicity necessarily accorded to certain notorious cases, I do not believe that the proportion among scientists is at all large. Neither do I believe that such men and women are led to their beliefs by science, in spite of the attraction of the pseudo-scientific language in which much of Marxist philosophy is dressed up. I believe that they are led to Marxism rather *as a reaction against science, seeking in an authoritative doctrine the answers to the questions that they cannot find in science.*

Your editor has brought to my notice the remarks of Rebecca West, who has suggested, I understand, that scientists are essentially disloyal, and that something should be changed in their education to make them less so. Well, if she will allow me to add authors and authoresses to the category, I would agree that perhaps her statement has a grain of truth. For great scientists and great authors deal with new ideas and new thoughts: it is their function to shake up society, to wake it up out of its lethargy and point the way it should go. Often individuals will point the wrong way—a way that perhaps seems wrong at the time and in the future as well. But if the function of scientists, as of authors, is to point to new things, and if this sometimes seems like disloyalty, this then is the price that a democratic community must pay for progress.

And if Miss West wishes to change the education of scientists, may I make a suggestion? Would she not like to make it compulsory for science graduates to study Marxist philosophy and the Russian language? To the great majority the first would be so repulsive and the second so difficult that they would never want to have anything more to do with them. And as for those who understood the first and mastered the second and, as most would, still believed in a free way of life, they would have a belief based on knowledge. And this would be worth having.

IV

SCIENTISTS HAVE A DUTY TO SOCIETY

MURRAY S. LEVINE

ONE would ordinarily hesitate to declare opinion on the duties of scientists in society, for every man must be the final judge of where his duty lies. However, I am pleased to be invited and to accept the invitation to contribute to this discussion, for two reasons.

First, since Hiroshima I have been intensely interested in the attempts made by scientists to tell laymen like myself, *our* new duties and responsibilities to society in this new age. I therefore feel it is fair, for once, to return some observations from a lay citizen observing scientists.

Secondly, I consider myself a "friend of the family," for during the late war I spent two and a half years as a barrier between the largest single group of scientists ever assembled in this country, and their draft boards, whose efforts to make soldiers of this team ended unsuccessfully in my office at Oak Ridge, Tennessee.

Out of 52,000 deferments obtained

by the Manhattan Project during the war, it is estimated that 19,000 were cases of physical scientists of all ages, descriptions, and backgrounds. I met hundreds of them in my office, in their laboratories, and at their homes, and have come to know many of them well, both as scientists and as citizens.

I learned their virtues—and faults—the hard way.

I remember back in late '43, when a group leader in one of our laboratories at Oak Ridge called me—to complain about four young scientists working on an important research project who were flagrantly failing to report to work on time each morning. I succeeded in convincing these Ph.D.'s that under the Selective Service regulations providing for persons regularly engaged in work in their group, they must 'punch their clock' on time each morning. I did not realize until later that no one could compel scientists to start to think at a certain time in the morning. It all worked out beautifully in the long run, because we found out that without pressure the same Ph. D.'s would work on their problems through the night and into the next day if necessary—draft board or no draft board. Scientists were not accustomed, I learned, to coming to work on time. But they were accustomed to working far beyond their duty.

So I do not intend a scolding or critical tone in this article, but shall make an objective attempt to state how the problem looks to many people like myself who have been on the fringes of science.

LARGER RESPONSIBILITIES

First, many of us—within and without science—feel that the scientist, particularly the physical scientist familiar with the new weapons developments, has far more duties to society than has the average citizen. We have observed with much interest and a great deal of admiration, the attempts made by a great number of scientists since '46 to fulfill these larger duties outside of the laboratory. We recognized in the group of scientists, sometimes called "The League of Frightened Men," who descended upon Washington in '46 and successfully lobbied against military control of atomic energy, the birth of a new era—one in which scientists would expose themselves to the hurly-burly of the political market place and the cruelties of shifting political fortune.

Since that time, many of us have been disappointed with some scientists who have felt that there is no longer much use in seeking to influence political action, and who are now, consciously or unconsciously, turning their backs on this duty to their fellow citizens, and returning to their "ivory towers" in the laboratories. I feel that the first duty of the scientist is to recognize that he has a new duty—of being heard in our government. This is a duty which must continue for an indefinite period of time.

Americans somehow take it for granted that the men elected to Congress should be lawyers. As a lawyer I would like to go on record to state that I think that a sprinkling of scientists in both Houses of Congress could be of great benefit to the nation. I would, therefore, not only urge that scientists continue their interest in governmental machinery, but perhaps offer the names of a number of their leaders to the American people at election time. It is interesting to note that Dr. James Bryant Conant's name ranked very high in a recent Gallup presidential poll. Scientists and politicians might be surprised by the people's action in choosing between a scientist and some of the men who now represent us in Congress.

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Some will ask, "Why should the scientists be 'singled out' for this or any continuing special duty?"

In the first place, scientists are not "singled out." They receive this special emphasis for reasons I will try to analyze, but they should not imagine that they are the only group subject to unusual and sometimes cruel social pressures today.

The people who are really singled out are the young men in this country. If scientists feel that it is unfair for them to be given somewhat special treatment because they possess brains, they can console themselves that this is not nearly so blind an accident as the special responsibilities placed on men between the aged of 18 and 26. These young men do not choose to be this age in 1951, but the scientists in most cases chose to be scientists. During a war these young men are chosen to carry guns and expose themselves to physical danger for the protection of our society. During a war scientists are picked to use their brains for the same purpose and these brains must be considered a reserve to be called upon if our way of society is endangered again.

EXAMPLES

To illustrate some observations on duty, I shall use the well-worn analogy of the "ship of state."

We are all aboard one ship, captain, crew, passengers, navigators, stowaways, saboteurs—the good, the bad, the brawny, the brainy, the informed, and the ignorant.

No one will deny there is a storm and the ship is in peril. Would any one deny that the persons possessing intelligence and brains have more responsibility in the hour of crisis than the ignorant persons aboard? To many people, including myself, it is essentially as simple as that.

Suppose that the ship is in imminent danger, requiring the possibility of combatting a fire. Does any one think that the designers of the fire-fighting instruments aboard do not have a duty beyond that of giving technical advice? At the moment, the uninformed are besieging the door of the navigator's office—their outcries seem to be not only that the navigators did not avoid the danger—the complaint is that the navigator *permitted* the danger. The ignorant believe the navigators should have waved some magic wand and caused the danger to vanish. They think the State Department need not "deal with foreigners" like the Chinese, but should command them!

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The ship analogy is no more perfect than the average analogy, but I shall try one more approach through it.

We can imagine various dangers for the ship of state—but let us imagine icebergs looming ahead. As is usual with icebergs, most of their bulk and their danger is below the surface, hidden and unknown to the average passenger.

Some of these partially seen "icebergs" may be taken to mean secret dangers in the usual classified sense—the dangers not known to all the ship's

Mr. Levine has appeared in the Bulletin *before, writing about the New York Committee on Atomic Information, of which he is chairman. His article here considers mainly the "duty of a scientist" at a time of partial mobilization.*

passengers, but known in great part to a privileged few. These, of course, may be known only dimly to the captain and his staff—who are usually busy men with limited time, particularly in a storm. The ship's command, by inclination and in great part of necessity, will spend more time listening to the "meteorologists" reporting on the winds of war and the "oceanographers" reporting on the tides of public opinion—than they will spend getting educated on the hidden shapes of ice mountains which may or may not come to cross our course.

To many of us, the responsibilities of the men who know icebergs (the men in A-bomb, H-bomb, bacteriological and biological warfare and in the fundamental research behind these things), these responsibilities are as great and as complex as those of any man aboard.

The first duty of these people,—that is, you—must be to know your icebergs. Although scientists have often rightfully told us not to be smug about American accomplishments, still sometimes one detects in them that selfsame nationalistic pride which complacently assumes that "we are the best." Certainly, we must *try* to be the best, but we must all be on guard against proud assumptions. Peron's Richter may some day turn out to be a challenge to our survival, instead of a fake wolf-cry.

So that the scientists should not escape the general injunction laid out to all hands aboard; this is no time for taking the kind of chances one takes in shuffleboard or chess. Let us be sure we know what we know and face squarely what we do not know.

These are real winds, real waves, and real icebergs—those who profess to know them must know them.

Then we must never forget that there is a duty to the ship beyond any other duty. The judgment of the ship as a whole must be expressed through the duly elected representatives, and this is where we really come to loyalty.

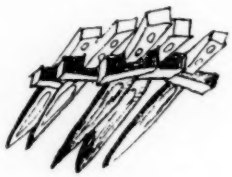
In any situation of real peril in our form of society, there must be subordination of individual will to the community will and judgment. The name for this is loyalty.

I know an ex-military man who put it this way, and he had special reference to scientists. "Going along with the crowd or a leader when you believe them to be right is merely exercising intelligence: it is going along with them when you think they are *wrong* which is loyalty. *Any damn fool can be intelligent, but when the chips are down it is loyalty which brings you through.*"

Even five-star generals forget this at their peril—and we need not labor the figure to say that undue insistence on dissenting views frequently accomplishes nothing except to rock the boat.

Our scientists have never been blind to loyalty. They were the first group in the country to understand the nature of atomic developments—and loyally took it to their government of their own volition.

Scientists have not to learn the principles of loyalty, but only to remember them.



They must remember that particularly in days like these, they have a duty to subordinate their actions to what they may personally feel is apparently wrong. It may be difficult for scientists to make a decision to subordinate the scientific spirit to other factors in the fields of political science and social science. Many laymen, some of us with deep personal religious and spiritual conceptions, are tormented by the same problem. But we all must remember that only the ship as a whole with the captain as its focus of action, can really approximate the best course for the voyage.

It must be particularly difficient for scientists to imagine that the ship may even founder, when untaken "scientific advice" might save it. Here they sometimes tend to single themselves out and one detects in them an impulse to abandon ship.

But the risk that the stupidity of one's fellowmen will "sink the ship" is an ancient human tradition recognized throughout history. In battles many soldiers have died because of captains' errors, or national ignorance or unpreparedness. The human impulse to jump ship can be understood and may even be forgivable, but to act on it, even to the extent of merely folding one's hands and saying "I won't be a party to your foolish navigation" is not only approaching disloyalty but happens to ignore the fact that we are all in the same boat. Just exactly how *can* anyone jump ship?

The most fundamental duty of the scientist, it seems to me, and it may be their most important extra duty, is for them to enable us to understand what they have already contributed and can contribute to the national safety, security, and welfare of the nation. It is a fundamental duty of every citizen to understand the ship's position. Those who *know* something about it have a duty in education.

There are a hundred tasks here in which scientists must contribute their bit. For they alone can tell us certain things which we must know in this new age. The captain, his crew, and the passengers of the ship in these stormy days must know your capabilities, for you have become special crew members since Hiroshima, and are no longer merely star-gazing passengers who used to seem completely unconnected with the actual ship's progress before August 6, 1945.

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The truth is that we outsiders can speak of your duty—and how many do!—but unless you tell us, we do not know exactly what your duty is. We don't know how to evaluate what you say; how to finance your equipment; how to put you to work in groups; and how and where you fit into the general mobilization. At this time when the wind howls so that what any man says may be twisted or simply blown away, it would seem to be your duty to find your duty, to tell us what it is, and to explain how to give you orders and how to know when they are truly fulfilled!

That is a lot to ask for, but do not doubt that it is asked. Peoples at the community level may not have indicated in a tangible way their deep admiration and respect for your accomplishments in the past ten years, but never doubt the fact that they know the great contribution you have made to the country. They take great pride in you as both scientists and citizens; they lean on your words and respect your opinions. They have come to expect you to fulfill a new role as a citizen, and as a leading citizen.

To this generation of scientists, the words of President Roosevelt apply with special force: "To some generations much is given; of other generations much is expected."

Your generation in science, I paraphrase, has a rendezvous with destiny.

V

LORD BOYD ORR ON THE RESPONSIBILITIES OF THE SCIENTISTS

IN A RECENT broadcast over a British television program, Lord Boyd Orr, noted British authority on food and agricultural problems, gave his views on the present duties of the scientist. He said:

"I wonder if you noticed in the press the other day the report of a meeting of scientists in London, where some of them predicted that in twenty years we would be able to send a rocket plane to the moon and in another twenty we would be able to land on some of the planets like Mars?

"What are they going to do when they get there, and I wonder what good some fellow landing on Mars is going to do people like you and me? These scientists would be far better employed using their great ability helping us to solve some of the troubles and difficulties we have in our own planet, because they are the people that cause the big problems we have today. Look what they have done. A few years ago they come along with an atomic bomb; they can blast to smithereens any city in the world. And before we had got accustomed to that new horror, they come along with a hydrogen bomb, which they say is a thousand times as powerful as the atomic bomb.

"These scientists not only produce these things, they can also produce things which are of great use to mankind. Look what the technologists have done. America can now produce double the amount of industrial and other goods that she did before the war. Europe now has produced 30 per cent more than it did before the war. All the world can now become industrialized, and we can now produce goods in abundance; we can produce everything that mankind wants, or we can produce atomic bombs.

"Look what medicine has done. Doctors have made great advances in curing diseases; they can cure nearly every disease now with their penicillin and all these wonderful new cures they have. But now medicine is much more concerned with preventing disease, and that is much more important. We have now the knowledge that we could eliminate the diseases which afflict more than half the population of the world—diseases like malaria and so on.

"These are very great advances. Scientists have given us these great powers, and that is the difficulty of our age. Look at the wireless and the airplane. The great wide world has now been compressed and brought close together, and so far as communication and transport is concerned, the whole world is now smaller than Yorkshire was in the nineteenth century. Nations are so dependent on each other that they must either cooperate for mutual benefit or fight for mutual destruction. Science has brought together people with different ways of life, different ideologies, different past histories, and they are all afraid of each other. The only solution is world government.

"Look at technology now. It was a very great gift to mankind to be able to produce foods in abundance, but there again you have difficulties. After the First World War, technology advanced at a great rate. Then, during the Second World War it advanced even faster. But here is the problem: can we adjust the economic system of the world so that that vast quantity of goods which science can produce, can produce the things mankind needs, or will it continue to produce bombing airplanes, atomic bombs, and battleships?

"Last spring I visited Sardinia and Cyprus. The British were trying to clear malaria out of Cyprus, and the Americans were trying to clear it out of Sardinia; and they were so sure they could do it that they had a bet on a barrel of wine as to whether the British or the Americans would win. The British won. Malaria was cleared out of Cyprus and, immediately afterwards, it was cleared out of Sardinia. What was the result? The people were so much healthier that the men could do more work, and the death rate, especially among children, fell to nearly the level it is in this country.

"Malaria is being cleared out in India too; and it has nearly been cleared out in the whole of Yugoslavia; they are starting to clear it out of Latin America; they are starting it in Asia. But look what is going to happen when they clear out all these diseases. Before the war half the people of the world had not sufficient food, and it is as bad today. The population of the world is increasing at the rate of 23,000,000 every year. How are we going to produce food for all these people?

"In this country, production has been greatly increased since the war because of the market for all the food we could produce. Take India, the worst fed country in the world: if they had fertilizers there; if they had tractors; if they had pumps and so on; you could increase their food production far quicker than the population could increase. Man can conquer the desert; they are now able to take the salt out of sea water, and in America they are carrying out experiments to do this on a big scale. If they can do that, then the Desert of the Sahara may be watered from the Mediterranean. There is almost no limit to the amount of food that the agriculturalists can produce.

"These are the great problems of science—the enormous powers which science has given mankind. And what has happened is that these great discoveries are pushing us into a new age where the conditions are very different from what they were in the nineteenth century. And we need new ideas. The politics of the nineteenth century, and the economics of the nineteenth century, will not carry the science of the twentieth century. We have got to look at facts and get the politicians to adjust their political ideas; to get nations to live together in peace."

News and Notes

by **Peter Axel**

DISARMAMENT PROPOSALS IN THE UN

Both the Western powers and the Soviet Union presented disarmament proposals to the UN General Assembly at its November meeting in Paris.

The Western powers' proposal was presented by Secretary of State Acheson on November 7. It called for a stepwise inventory of all armed forces and armaments (beginning with the least vital armaments but finally including atomic), in every country having substantial military power, with UN inspection to verify and guarantee the inventory. Following this, the proposal suggests the working out of specific arrangements for the reduction of armed strength. The actual reduction in armaments would come "as soon as that can be done with full knowledge and fairness to all." In addition, the Western proposal stated that "concurrently with the coming into effect of the (disarmament) program, the major political issues which have divided the world can and must be settled."

Soviet Foreign Minister Andrei Y. Vishinsky introduced a four-point Soviet proposal on November 16. It called for "the unconditional prohibition of atomic weapons and the establishment of strict international control of the implementation of this prohibition." It also suggested an immediate one-third reduction in all arms and armed forces. The third Soviet point called for an immediate total arms inventory. The final point covered the establishment within the framework of the Security Council of an international control organ which would supervise the disarmament proceedings.

In his presentation, Mr. Vishinsky quoted some U.S. newspaper editorials which pointed out that (since the chances of Soviet acceptance of the Western proposal were slight) the Western plan would serve mainly as a propaganda device. For example, the *Washington Post* stated:

"It is hard to escape the conclusion that the Western proposals were designed to put Soviet propagandists in a hole; that they were timed to blanket any fakery about disarmament that might come from the Kremlin and announced without the slightest hope of producing effective results. In our opinion, this is an intolerable way to conduct foreign policy, because it confuses propaganda with statesmanship."

The disarmament proposals were discussed in greater detail as the first item on the UN Political and Security Committee agenda. The original agenda, adopted on November 17, placed the Western proposal first and the Soviet plan fourth. However, in a parliamentary maneuver, Mr. Vishinsky reintroduced the essentials of the Soviet plan as an amendment to the Western plan. On November 19, Secretary Acheson explained the details of the arms plan and tried to indicate that Vishinsky's objections and fears could be satisfied within the plan's framework. Mr. Acheson said that "there must obviously be some connection between the solution of the great problems, the reductions of tensions and the reduction of armaments," but declared that the West was not "suggesting that there are any unexpressed conditions that this problem or that problem or some other problem must be solved before this goes into effect."

Answering Mr. Vishinsky's charge that the proposed system of "stages" in conducting the arms census would enable the U.S. unilaterally to block disclosure of its atomic stockpile, Mr. Acheson stated: "The progression from one stage to another should be an administrative matter within control of the commission controlling and administrating the disarmament agreement. In other words, it should not be a political decision to be made by states."

Mr. Acheson reaffirmed earlier Western statements that disclosures would start with the least vital information going on to more sensitive areas. He added, though, that "concurrently" with the disclosure of less secret information regarding nonatomic forces and armaments, "there are certain parts of the atomic field which can also be disclosed and verified." Mr. Acheson did not say what these were, but he emphasized that "the important thing" was not the amount of nuclear fuel installed in the bombs but the amount "which has been produced and is being currently produced."

Mr. Acheson also explained that while the allowable armed force for a country would depend on its population and productive capacity, "there will have to be a flat limitation beyond which no country is permitted to go no matter how vast its population is."

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As discussions before the UN Committee continued, it became increasingly clear that the propaganda value of the meetings was making it more difficult to reach any agreement. This fact motivated an Arab-Asian suggestion that the Big Four—Britain, France the U.S.A. and the USSR—should conduct secret disarmament meetings. The suggestion was accepted by the Western powers on November 28, received much small-nation support the following day, and was finally accepted by the Soviet Union. However, reports which leaked from the early secret sessions were not particularly encouraging.

UNCLASSIFIED AND DECLASSIFIED REACTORS

The newly completed Norwegian reactor at the Kjeller research station near Oslo was formally opened by King Haakon of Norway on November 28. This 100-kilowatt reactor uses about 2.5 tons of purified natural uranium in a bath of seven tons of heavy water. The aluminum water-containing tank (about two meters in diameter) is surrounded by sixty-two tons of graphite which acts as a neutron reflector. The reactor produces (a

flux of) 3 x 10^{11} neutrons per square centimeter per second ($m/cm^2/sec.$).

The cost of the reactor and the related laboratory facilities was given by Dr. Gunnar Randers as $2,408,000. This total does not include the unestimable cost of the uranium. The following breakdown was given:

Reactor building and shield	$ 72,000
Reactor tank and cooling system	50,000
Electronic automatic equipment	57,000
Heavy water (estimate)	2,000,000
Radioactivity laboratory	143,000
Physics laboratory	86,000

The annual research budget is expected to be about $170,000.

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The planned reactor at North Carolina State College in Raleigh will be able to give a comparable number of neutrons, although it will be much smaller. The great saving in size is made possible by the availability (through the USAEC) of uranium enriched in U^{235}. Two pounds of U^{235} (as uranium sulfate) will be dissolved in heavy water within a stainless steel cylindrical tank 10¾ inches in diameter and eleven inches high. The reactor will operate at a power level of about ten-kilowatts and will have a surface thermal neutron flux of at least $10^{11} m/cm^2/sec$. In addition there will be a comparable flux of fast neutrons. About thirteen tons of graphite will surround the tank to act as a neutron reflector. The total cost of this reactor, exclusive of the AEC-supplied U^{235}, will be only $100,000.

A similar "homogeneous" reactor at Los Alamos has about the same size and contents. It operates at a six-kilowatt power level and produces a neutron flux of more than 3 x $10^{11} m/cm^2/sec.$ at the center of the tank.

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The design of a moderately priced low-power reactor for research purposes was announced by the U.S. Atomic Energy Commission on November 12. The design was made by North American Aviation, Inc., whose Atomic Energy Research Department at Downey, California is developing the required components.

This reactor core consists of enriched uranium and graphite sealed into an aluminum tank. The graphite slows down ("moderates") the graphite, thereby serving the moderating function of the heavy water in the three reactors mentioned above. Graphite will be used as an external neutron reflector as well. Heavy water will be used as a coolant. The power level is expected to be about 160-kilowatts, and the neutron flux is estimated as $10^{12} m/cm^2/sec.$ The current estimate of the construction cost is about $1,000,000 (with the AEC providing the U^{235}).

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The British Ministry of Supply announced that the heat generated by a nuclear reactor at Harwell was being used to warm an eighty-room building. This token utilization of atomic power is not the result of any new development in reactor design. The British are merely using the heating system to help cool the 4,000-kilowatt pile, Bepo, which normally runs at about 200° centigrade. The heat exchanger, which circulates water at 54° centigrade (130° Fahrenheit), cost $42,000,000.

U.S. A-BOMB TESTS

After three more A-bombs[1] were exploded in the Nevada proving grounds in November (November 5, 19, and 29), Dr. Alvin C. Graves summed up the results of the tests in an interview reported by Associated Press on December 2. The scientific director of the AEC tests was reported to have stated that America's atomic knowledge had virtually doubled in 1951 and that its stockpile of nuclear weapons had kept pace. He indicated that the advance in atomic weapons in the past year were almost equal to all the previous developments which followed the first nuclear detonation in Alamogordo, N.M., in 1945.

The November 5 test, the mightiest of the current series of seven, was made with a B-29-delivered A-bomb. The AEC announced that this fifth blast concluded the first phase of the present series.

The second phase of the series was begun with the explosion of what observers termed a "small" atomic bomb on November 19. The bomb exploded from what appeared to be a very low level, giving rise to a ball of fire that thrust upward. The explosion was small enough to have its shock and sound effects enclosed in the mountain ringed test area. Official reports from newspaper observers indicated that the conventional mushroom cloud did not emerge; instead, an amorphous brown and white vapor mass was emitted and rose to an altitude of several miles. The Civil Aeronautics Administration warned aircraft to remain at least 150 miles from the blast for twelve hours following the blast. (After the apparently larger high altitude explosion on November 5, planes were warned out of the vicinity for only one hour.)

The final test blast flashed little more than a pinpoint of light. The subdued nature of the blast which produced two abbreviated columns of smoke and debris led some observers, including United Press reporters, to speculate that it had been detonated underground. On December 1, an International News Service dispatch reported a "gaping hole" in the earth and inferred from this that the November 29 explosion had been detonated underground.

The first phase of the test series (five blasts) was designed primarily to test the bombs and their detonating mechanisms. (However, troops did participate in the fourth test explosion.) The second phase was designed to test conventional military and civilian equipment. The seven test explosions bring the total number of A-bombs test within continental United States to thirteen.

NATIONAL SCIENCE FOUNDATION

The reduction in the National Science Foundation appropriation from the President's budget request of $14,000,000 to $3,500,000 has required considerable material reduction of the proposed program. According to Dr. Alan T. Waterman, director of the Foundation, approximately $1,500,000 of the available funds will be allocated for the support of basic research in biology, medicine, mathematics, the physical sciences, and engineering; about $1,350,000 for the training of scientific manpower; and the balance for development of a national policy for the promotion of basic research and education in the sciences, for the wider dissemination of scientific information, and for other services including support of the National Scientific Register, now established in the Office of Education.

Basic scientific research will in most cases be supported by means of research grants. No grants have been

[1] The first four explosions of this series were reported in the *Bulletin*, November, 1951.

made to date, although a considerable number of research proposals have been received from investigators in all parts of the United States. It is expected that many more proposals will be received shortly.

Proposals for research grants will be given preliminary evaluation and review by the Foundation's three research divisions: the Division of Biological Sciences under Dr. John Field; the Division of Mathematical, Physical and Engineering Sciences under Dr. Paul Klopsteg; and the Division of Medical Research under Dr. John Field (acting). Each Division will be assisted in evaluation and review by a Divisional Committee, made up of outstanding scientists in the field, and by expert consultants employed on a part-time basis. Grants will be approved by the Director and the twenty-four member National Science Foundation Board.

The National Science Foundation Graduate Fellowship program will be directed by the Division of Scientific Personnel and Education under Dr. Harry C. Kelly. Selection of fellows will be made solely on the basis of ability and will be carried on by the National Research Council, which has participated in the selection of fellows for various government and private agencies for many years.

Approximately 400 graduate fellowships will be awarded by the National Science Foundation for the academic year 1952–53, in the mathematical, physical, medical, biological and engineering sciences. Fellows may elect to receive training in fields which combine two or more of these sciences. No awards will be made for study in clinical medicine, although applications will be considered from medical students who wish to prepare for careers in medical research.

The majority of National Science Foundation Fellowships will be given to pre-doctoral applicants, particularly to those who will be eligible to begin graduate study during the coming year. A limited number of post-doctoral Fellowships will also be awarded.

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According to a United Press dispatch of December 1, the Russian newspaper *Soviet Art* has announced that Sergei Mikhalkov's poem, "Song of the Soviet Atom," was recently set to music by the composer Vano Muradeli.

(*Continued from page 366*)

court for the District of Columbia sustained the government in this case; the Court of Appeals for the District of Columbia affirmed the decision of the lower court by a vote of two to one; and the Supreme Court, by an even vote, four to four, Justice Clark abstaining, declined to reverse.

In another Supreme Court case, *Joint Anti-Fascist Refugee Committee* v. *McGrath*, attacking the legality of the Attorney General's list of subversive organizations, the Court returned the case for further proceedings before the District Court.[7] A case arising from Los Angeles is also relevant. The city had enacted an ordinance declaring that no person shall hold or be eligible for any public office in Los Angeles who advises or is a member of an organization that advises the overthrow by force or violence of the government of the United States or of California. The ordinance required an oath that the employee or applicant did not so advise, and an affidavit stating whether he was or ever had been a member of the Communist party or Communist Political Association. In a widely divided Court, both the oath and affidavit were sustained.

TWOFOLD NATURE OF LOYALTY PROGRAM

In its report in 1862 the House Select Committee declared that the danger of continuing disloyal men in public employment was a proposition too plain to be questioned. In a statement of November 14, 1947, President Truman said, "I believe I speak for all the people of the United States when I say that disloyal and subversive elements must be removed from the employ of the Government."

At the same time the President went on to say, "We must not, however, permit employees of the Federal Government to be labeled as disloyal or potentially disloyal to their Government when no valid basis exists for arriving at such a conclusion." The loyalty boards have consistently recognized an obligation to protect equally the right of the government to exclude disloyal persons from the public service and the right of individuals to protection against unfounded accusations of disloyalty.

The Loyalty Review Board has also been concerned to protect the right of citizens to hold and express minority opinions, without incurring the risk of disloyalty charges. On the first page of the "Statement, Regulations and Directives of the Loyalty Review Board" (revision of August 15, 1951) is found the following language:

"Advocacy of whatever change in the form of government or the economic system of the United States, or both, however far-reaching such change may be, is not disloyalty, unless that advocacy is coupled with the advocacy or approval, either singly or in concert with others, of the use of unconstitutional means to effect such change."

This language carries meaning and has force. Many years ago a civilian employee of the government began a one-man campaign to prove to his American neighbors that the Russian system of government and economic production was superior to that of the United States. He made no concealment of his preference, loved a good argument, never deviated from his position, and was universally accepted by his community as a warm-hearted man of integrity, "cracked" on this particular subject. After years of uninterrupted government employment in the same post and with an excellent work record, he was found disloyal by his agency loyalty board. The Loyalty Review Board reversed the decision, finding no evidence of disloyalty in the record but merely an honest, if mistaken, opinion. His actions were above board and were not concealed.

On the other hand if such opinions are accompanied by evidence of membership in or sympathetic association with organizations or persons of a subversive character or other evidence bearing on disloyalty, they would carry evidential value to be weighed in the light of all other aspects of the case.

The Loyalty Review Board, whose operations serve to lend consistency to the whole widely-scattered system, has in some special degree the responsibility of balancing the two-fold aspect of the loyalty program. It has the duty to protect the government against truly subversive elements; and it has also the duty of protecting citizens against frivolous, prejudiced, or unfounded allegations. Both are essential to the safety and the wholesomeness of American democracy.

[7] 341 U.S. 123 (April 30, 1951).

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